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Chapter One

Introduction

“Only when the air quality was good would I dare take my daughter outside with me. But how many good days were there? That year there were 175 polluted days. That means in one year, half of the time I had no choice but to keep her at home like a prisoner” (Jing; 2015).

China’s impressive economic growth and rapid industrialization has come at a price of severe environmental degradation, earning it an international reputation as one of the world’s most polluted countries. Air pollution stands out as one of China’s most urgent environmental problems, presenting both an obstacle to continued economic growth and a threat to the health of the Chinese people. Unfortunately, air pollution is also pervasive, with only 23.9% of Chinese cities meeting national air quality standards as of 2014 (Kong; 2014). This means that air pollution presents a threat on a national scale. The severity of air pollution has sweeping health and lifestyle impact for urban residents. Chai Jing, a well-known reporter for China Central Television (CCTV) released a documentary in March 2015 entitled “Under the Dome” about China’s air pollution crisis. As described in the quote from Jing above, Chinese parents often forbid their children from playing outside on smoggy days (Jing; 2015). And they are not without good reason. According to estimations by the World Health Organization, China’s outdoor air pollution was associated with approximately 300,000 premature deaths in 2005 (Kan; 2009). More recently, in January of 2013 during a period of particularly heavy smog, 27 different cities around China experienced increases in emergency room visits between 10 to 150% (Jing, 2015). These statistics are made grimmer by the fact that ambient air quality in major cities in China has continued to decline. The Chinese government uses three tiers to describe ambient air quality in
major cities. Grade I is considered excellent, Grade II is fair or good, and Grade III is poor. Between 2010 and 2014, the number of days where air quality was better than or equal to Grade II standards in Beijing fell from 286 to 168 days per year. In Nanjing, the capital of Jiangsu province, these days fell from 349 to 188 (National Bureau of Statistics of China, 2010; National Bureau of Statistics of China, 2015). Air quality is an issue that urgently calls for a resolution in order to both ensure the health of the Chinese people and support the long-term sustainability of China’s development.

Researchers have long understood that college students in China belong to an elite educated group that will play a direct role in determining future solutions to air pollution. As such it is important to evaluate the environmental behaviors and attitudes of this generation poised to inherit the management of China’s environmental problems. This generation of Chinese is unique; they are both the beneficiaries of recent economic development and victims of its environmental degradation (Hong; 2011). Whether as prospective business owners, party leaders, teachers or simply members of China’s rising middle class, college students represent the future generation that will be responsible for improving air quality to acceptable standards. In order to predict the ways in which college students will address urban air pollution, it is necessary to understand how they currently relate and respond to air pollution in their communities.

Several studies have been done in the past regarding the environmental attitudes and behaviors of Chinese college students. These studies have found that while Chinese college students demonstrate a keen consciousness of environmental issues and generally hold environmentally friendly attitudes, they also lack factual knowledge of the science behind environmental concerns. A 2003 study of environmental awareness in Beijing University
students, one of the earliest studies of this topic specific to China, indicated that students perceived environmental problems with high urgency (Wong; 2003). Subsequent studies in other regions have shown that despite this sense of urgency, college students demonstrate a comparatively low level of factual environmental knowledge. A 2011 regional comparison of students in Shanghai and Gansu indicated that students viewed water pollution, global warming, and air pollution as extremely urgent environmental issues. However, in following sections of this study, students performed poorly on factual questions regarding those same topics (Hong; 2011). In 2014, a survey of environmental awareness in Shanghai college students demonstrated again that students had a high sense of environmental awareness and were actively concerned over environmental problems. Yet this group of students also lacked scientific knowledge of those topics, beyond a basic conceptual understanding (Kong; 2014). In its conclusion, the Shanghai study proposed that high scores on awareness could be attributed to the media portrayal of environmental issues or “learned responses” resulting from environmental education in public schools (Kong; 2014). These “learned responses” could explain the separation of environmental awareness from scientific understanding in these students’ responses; they were repeating opinions gathered from popular portrayal of environmental issues rather than fact.

The phenomenon of high environmental concern and low environmental knowledge appears to be prevalent across regions and age groups. A 2004 study of environmental education and resulting awareness in primary and secondary students in Kunming indicated that while environmental concern was high among both groups of students, scientific environmental knowledge was poor overall (Jinliang; 2004). On the factual knowledge section of the Kunming survey, when given seven major environmental topics only 12 percent of students selected the correct answers and 43.8 percent could not name any major global environmental issues.
(Jinliang; 2004). Returning to the regional comparison of students in Shanghai and Gansu, students from both groups on average answered only 54 percent of questions correctly on a test of their environmental knowledge (Hong; 2011). This phenomenon is not only specific to China. A 1998 study of environmental knowledge and behavior of Singaporean students showed that the environmental knowledge of university students was lacking in specific topics (Ivy; 1998). Students’ scored the highest in general knowledge section of the test, followed by basic concepts and lastly, the factual section (Ivy; 1998). While Singaporean students scored higher on average than students in other nation-wide studies, such as the United States, their overall scores on factual knowledge where much lower than their environmental awareness (Ivy 1998).

Despite their comparatively low level of scientific knowledge, Chinese college students are both environmentally conscious and demonstrate environmentally friendly behaviors. However they do not engage in environmental activism as a method of improving air quality. This may be a result of their perception that the general public is not responsible to address environmental problems or promote environmental protection. Returning to the 2003 study of university students in Beijing, students largely viewed environmental problems as the responsibility of the local government; only 5.7 percent of this survey group indicated that the general public should bear responsibility (Wong 2003). A majority of students in the same survey felt that the best method to increase the effectiveness of environmental management would be to strengthen policy implementation, and supported the efforts of Non-Governmental Organizations (NGOs) to pressure the government for stronger policy solutions (Wong; 2003). However, less than 6 percent of the survey respondents were members of environmental protection associations or organizations in university (Wong; 2003). The 2014 study of Shanghai university students showed similar results. Sixty-five percent of students in Shanghai held the
opinion that the government holds responsibility to solve environmental issues, and 19 percent responding that the general public is responsible (Kong; 2014). Participants in the Shanghai study generally responded that they felt the general public had neither the power, influence, nor the resources to take responsibility for environmental protection (Kong; 2014).

These studies have established that Chinese college students generally hold very environmentally friendly views. Equally as important are the actions that they take on environmental issues, which will serve as indicators of their actions in the future. Students in these studies reported very low participation in environmentally friendly activities, but a high willingness to take action on environmental issues. Specifically, in both Beijing and Shanghai, surveyed students reported willingness to engage in environmental activism or participate in organizations that aimed to solve environmental problems (Wong; 2003, Kong; 2014). However, the actual level of participation in those organizations was very low, with fewer than 10 percent of surveyed students participating in an environmental organization and even fewer claiming “active participation” (Wong; 2003). Clearly students perceive environmental issues, including air pollution, as severe and urgent. They at minimum understand basic concepts behind these issues, though they lack the scientific environmental knowledge to support their opinions. However, they do not organize to address these issues as a group; their behavior, outside of individual habits, does not reflect the commitment to environmental protection they claim to have. What is the cause of this disconnect? How will this generation of educated elites address environmental problems in the future, if they are currently unwilling to act with group intentions of improving environmental conditions?

Chinese college students are both aware and knowledgeable of the negative effects of air pollution. Despite being an environmentally conscious group, Chinese college students do not
regularly engage in environmental activism seeking to address air pollution. This lack of student engagement, in spite of being well-informed of the issues, indicates that air pollution will not be solved through environmental activism. Framed as a pilot study, this research will analyze the opinions and behavior of 44 college students in Jiangsu, China in order to predict how Chinese youth will seek to solve problems of air pollution. This research will focus on environmental activism as a measure of the willingness of college students to address air pollution as a collective group. By analyzing the responses of these students, this research will evaluate how students view and are involved in environmental activism, as well as what methods students prefer in terms of solving air pollution. Using this information and data from previous studies, this research will predict what actions students will use to improve air quality in Jiangsu.

The second chapter of this thesis will describe the current conditions of air quality in China and how air pollution has come to be a persistent and complex problem. This chapter will also discuss the regulatory framework surrounding air pollution and different Chinese perspectives towards the environment over time. The third chapter will describe the research methodology used in this study, its benefits and limitations, as well as an overview of survey questionnaire. A discussion of qualitative and quantitative structures in previous studies will be included here, including how these structures effect response rates. The fourth chapter will be a presentation of the survey results, including discussion of pervasive trends and surprising outcomes. The fifth chapter will discuss the significance of these results and make predictions of how Chinese college students will address air pollution in the future and what role environmental activism will play in improving air quality. The final chapter will conclude with closing remarks on the greater significance of this research and a brief analysis of how this pilot study may be used for further work in this field.
Chapter Two

Historical Context of Air Pollution and Chinese Environmental Activism

Air pollution is a multifaceted problem, with both social and scientific factors contributing to its complexity. These factors not only make air pollution a difficult problem to solve, but have also strongly influenced the environmental perspectives of Chinese people including college students. This chapter will discuss two topics: (1) the current causes of air pollution and obstacles to effectively addressing the problem and (2) Chinese historical and social interpretations of nature and the special characteristics of Chinese environmental activism. These separate but interrelated topics each have a large impact on the environmental behaviors of college students, especially how and why they engage in environmental activism. By exploring these historical and cultural influences, this chapter will contextualize the results of this research and describe the background knowledge needed to understand and interpret the survey analysis to come.

The Rise of Air Pollution

As it is used here, air pollution is an umbrella term for various chemicals, dusts, and particles which create hazardous environmental conditions when present above certain concentrations. These include PM10, PM2.5, SO2, NOx, volatile organic compounds, O3, and CO2 among others. The amount of these pollutants varies depending on their source of emission, weather conditions, how they interact with each other in the atmosphere, and if the Chinese government has targeted them for emission reduction. However, not all pollutants are actively monitored or regulated by the Chinese government. Monitored pollutants include suspended particulates PM10 and PM2.5, SO2, and NOx (National Academies Press et al., 2008).
PM is an overarching term for particulate matter which contains varying amounts of ammonia, industrial dusts, and other chemicals. PM varies in size up to 10 micrometers and 2.5 micrometers, which define the separate categories of PM10 and PM2.5. Both PM10 and PM2.5 are especially threatening health concerns, as they can easily enter the lungs and penetrate the bloodstream causing respiratory illnesses and even effecting other organs. In China approximately 300,000 deaths annually may be attributed to outdoor air pollution. It is estimated that nearly 50 percent of respiratory ailments in China are related to excessive air pollution (National Academies Press et al., 2008). SO2 is another major source of respiratory illness, as well as being a major component of acid rain, which damages infrastructure, historical monuments, and harms crop yields. The Chinese government has focused most of its regulatory efforts on PM, SO2, and more recently NOx, with less attention given to secondary pollutants such as O3, or the sulfate, nitrate, and ammonium components of PM (National Academies Press et al, 2008). Although concentrations of these primary pollutants have been successfully reduced, China has increasingly begun to suffer from the more complex air hazards of advanced economies. These hazards are caused by secondary pollutants created as a result of atmospheric reactions between primary pollutants and preexisting gases such as ozone (Mun, 2014). The national prioritization of a few primary pollutants has been based on existing pollution control options that are well understood, but has neglected other concerning pollutants and ignored complex secondary pollutant pathways (Mun, 2014). Due to the chemical complexity of air pollution and China’s strategy of targeting specific pollutants, it is clear that China’s air quality will not improve dramatically unless it begins to support research and policy development that addresses the impacts of air pollution as a whole. By virtue of the chemical complexity of air pollution, results of pollution reduction policies will not be instantaneous.
China’s air pollution has risen in tandem with its economic growth and has largely been a result of expansions in energy production and industrial sectors. Sources of pollution are very diverse, including burning biomass, urban construction, and vehicle emissions. However, by far the largest pollution threat is coal-based energy production, which in 2013 accounted for 75.6% of total national energy production (National Bureau of Statistics of China, 2014). Although China lacks oil and other fossil fuels, there is an abundance of coal in the northeast portion of the country. The economic reforms of the 1980s saw the development of many new small coal mines and coal fired power plants to support energy demands from rising export industries (Marks, 2012). Coal related emissions have not been traditionally held to clean energy standards, and the current level of energy consumption in China is projected to increase at an annual rate of 3.5 percent, nearly doubling current consumption by 2025 (Day, 2005). Given the expected increase of energy demand and the contribution of coal-based energy production to air pollution, energy production presents a very serious obstacle to improving air quality. In consideration of rising energy demands, China has continued to look for alternative sources of energy in oil, natural gas, wind power, and hydroelectric power. Despite strong growth in the renewable energy market and advances in renewable technologies, where China is one of the largest investors in the world, the combination of all renewable sources is expected to meet only 20 percent of China’s projected energy demand by 2020 (Marks, 2012). Consumption of oil and other fossil fuels also represents a potential threat to energy security, as most of these fuels must be imported. Imports of oil are especially concerning, for both energy security and emissions levels as the automotive industry expands into a new middle class market. In 2010, China’s import of oil was over 239 million tons, more than half of total consumption (Andressen, 2013). With limited options for alternative energy sources, China will be forced to continue its reliance on coal into the foreseeable future.
The severity of air pollution has increased over time and now represents a serious threat to public health and continued economic growth. As recently as December 7th 2015, Beijing declared its first red alert for hazardous smog, closing schools and encouraging residents to remain indoors until the heavy pollution passed (Chen T., 2015). As of 2013, China spent 1.59% of its GDP on investments into pollution control (Ministry of Environmental Protection, 2014).

The complexity of air pollution, in combination with China’s increasing energy consumption and the increase in automotive use, indicate that the sources of this problem will be both long lasting and difficult to resolve. The long term health and economic implications of poor air quality remain to be seen, however it is clear that this issue will require time and creative solutions.

**Combating Air Pollution**

The Chinese government is highly conscious of the threat posed by air pollution and has been actively attempting to improve air quality and other environmental issues. In the early 1970s the Chinese government began to establish a new system of environmental regulation in order to address major environmental issues brought about by economic development. The history of this system has been quite brief, with a little over four decades of active regulation since the First National Conference on Environmental Protection in 1973 (National Academies Press et al, 2008). Since this first conference, the China has gradually expanded elements of environmental management within the government and given them more regulatory power. In 1984 the National Environmental Protection Bureau was established as the environmental policy making and enforcement branch of the government. In 1998 the bureau was promoted to ministry level and renamed the State Environmental Protection Agency or SEPA (Ren, 2013). SEPA was charged with overseeing all aspects of national environmental control and regulation, despite being both understaffed and underfunded (National Academies Press et al, 2008).
2008 SEPA was promoted to its current status as the Ministry of Environmental Protection or MEP, and was placed under the direct supervision of the central government. As MEP, the organization experienced a large growth in staff and funding allocations, while retaining SEPA’s original purpose as the primary organization responsible for China’s environmental management. As a central level ministry, MEP also gained a large degree of power to influence policy decisions regarding environmental regulations, including air quality regulation and pollution reduction (Ren, 2013). Aided by the establishment of the MEP, the Chinese government has successfully developed a wide range of environmental laws and ambitious emission targets to improve environmental conditions. During the Second National Environmental Protection Conference in 1983, the government included mandatory environmental standards in policy outlines to the tenth Five Year Plan (Lin, 2010). China’s Five Year Plans state the government’s economic goals and policy guidelines for the next five years of development. Including environmental goals in these plans has been instrumental to the development of environmental law. In the tenth Five Year Plan (2001-2005), China pledged to spend 1.3 percent of its GDP on the environment sector, focusing on pollution control and prevention (Day, 2005). Later, the eleventh Five Year Plan (2006-2010) set targets for reducing the energy intensity of the economy by 20 percent and reducing SO2 emissions by 10 percent. In 2009 China committed itself to reduce the carbon intensity of its economy 40 percent by 2020, compared to 2005 levels. The twelfth Five Year plan (2011-2015) recommitted to those goals, with additional targets for SO2 and NOx emissions (Mun, 2014). These emissions targets have experienced various degrees of success in terms of targeting individual pollutants. Going forward, China has continued to emphasize its commitment to improving air quality both domestically and internationally. This
commitment and the ambitious goals set by the Chinese government have been integral to the progress that China has made towards pollution reduction.

Despite the commitment of the central government, air quality has only experienced marginal improvements. This is due in part to poor local implementation of central level policies. While China has an impressive system of environmental regulation, the duties of the MEP are largely based in the central government. Actual implementation and enforcement of MEPs policies fall under the responsibility of the MEPs regional branches, local Environmental Protection Bureaus or EPBs. The complex relationship of EPBs to local governments and industries often results in failure to fully implement central level policies (Ren, 2013). The complexity of this relationship is partly a result of funding issues; EPBs are embedded in the local government and receive most of their funding from officials who often prioritize economic growth over environmental protection. EPBs must balance their mission of environmental protection against their desire to remain in the good graces of the government officials who provide their funding. This often results in a weak or even corrupted EBP and creates a serious obstacle to effective implementation of the central governments environmental laws (Ren, 2013). Though EPBs perform regular and often unannounced inspections of local industries, they have too little power to enforce anti-pollution laws. The offending industry often returns to their polluting behavior soon after inspections are complete. The threat of a fine is not enough to deter the behavior (Day, 2005). Ultimately poor enforcement of central level policies leaves few options for effectively combating air pollution.

In addition to problems stemming from policy implementation, economic factors have also contributed to the continuation of air pollution in China. China’s energy demands have been growing steadily, driven by economic growth as industries expand and urban residents consume
more energy. Since the early 2000s, China has been focusing on reducing air pollution by reducing energy intensity, or the amount of energy used per yuan spent. Energy intensity fell almost continuously at a rate of 5.1 percent per year until 2002, rose from 2002 to 2005, and then began to fall again (Mun, 2014). Over the 1998–2008 period, when GDP was growing at 9.9% per year, PM10 and PM2.5 fell at 7.5% per year and SO2 emissions experienced no net change.

During this time, China has managed to both grow economically and improve air quality. Yet, as energy demands continue to increase, the positive impact from lowering energy intensity may be overtaken by the addition of new coal-fired power plants. In order to continue reducing emissions, China must be able to produce the additional energy needed to meet demand from renewable or non-polluting sources, but faces many economic obstacles in the renewable energy sector. China has a huge potential for renewable energy, yet renewable energy remains an underutilized source of energy. The Chinese government has attempted to bolster the renewables market with high levels of investment and by passing the Renewable Energy Law in 2005, which mandated that power companies purchase all energy produced from renewable sources (McElroy, 2009). Despite legislative support, the cost of building renewable infrastructure and connecting sources to the existing power grid remains a significant barrier to future development of the renewable energy sector. Additionally, coal-based energy production has the economic benefit of having pre-existing infrastructure and a substantial share of the energy market as China’s main fuel source. Together, the challenges faced by renewable energy development combined with rapidly rising demand for energy indicate that without significant intervention, China will not be able to resolve problems of air pollution purely through economic means.
Evolving Chinese Perspectives of the Environment

From China’s earliest dynasties, Chinese views of nature have emphasized cosmic interconnectedness with humanity and practical conservation of natural resources. As early as the Qin (221-206 BCE) and Han (206-220 BCE) dynasties, Chinese imperial courts were developing laws to protect natural resources, with varied success (Sanft, 2010). Gradually over the course of the third century CE, elites in China developed an artistic and moral philosophy that considered nature as the exemplification of the deepest working forces of the cosmos. By the fourth century CE, these perspectives were popular and commonplace among the Chinese aristocracy (Elvin, 2004). Thus Chinese perspectives of the environment, at least among the elite, developed to view humans and nature as interconnected elements of a cosmic power system and moral order. This interconnection can be witnessed in Chinese-English translations of “nature.” The common modern English-Chinese translation of nature is 自然, pronounced ziran. However, older Chinese-English translations interpreted the character 天, pronounced tian, as “nature.” Translated literally, tian means sky, however Chinese use of the word also includes broader interpretations as “heaven” (Weller, 2006). Many aspects of human life were considered to be influenced by nature, including imperial politics. Imperial rulers were said to have received the mandate of heaven or 天命, pronounced tianming, and were considered a direct link to tian in the heavenly sense. Imperial rulers were charged with protecting the natural order by heeding social and ethical values (Elvin, 2004). Natural disasters, such as drought or flood, were considered evidence that the imperial family had failed in their duties and angered heaven. When poor environmental conditions persisted, public unrest grew and the imperial family faced the threat
of political dissent and or even revolt. New dynasties were often established following natural disasters as common people attempted to restore what they saw as an imbalance of the natural order. While people in imperial times may have altered nature to suit their needs, nature during this time period was not considered a passive object but a fully empowered entity that could directly act on people.

During the Maoist era, from 1949 to 1976, nature, or in this case the physical environment, was considered a challenge and obstacle to be conquered by the proletariat. Mao used his position as a political and ideological leader to stage a “war against nature”, which resulted in extreme environmental damage (Shapiro, 2001). Campaign slogans such as “Man must Conquer Nature” and “Great Courage Brings Forth Great Yields” accompanied programs to increase arable farmland by filling in natural wetlands and increase steel production through homemade ironworks fed by China’s forests (Shapiro, 2001). Alongside the campaign to remove the Four Olds, Mao also advocated for removal of the “Four Pests” including the sparrow population that ate insects harmful to crop yields (Shapiro, 2001). Chinese people earnestly worked to remove the pests and killed most of the native sparrow population; harvests suffered greatly in the aftermath. Scientists who gave evidence opposing such projects were ostracized or even jailed, and viewed by the public as traitors to the working class (Shapiro, 2001). Mao emphasized economic results over environmental protection of sustainability, even in the face of indisputable evidence that his programs would be very detrimental to future development. By emphasizing quotas and speed, Mao’s campaigns united the Chinese people with military styled language and strategy in a misguided attempt to bring China to the forefront of economic success (Shapiro, 2001). Ironically, these campaigns did more harm than good, creating massive deforestation, destruction of important wetland ecosystems, and the overall
reduction of arable lands. The concept of the nature promoted by Mao directly opposed the views of human interconnectedness with the natural world that flourished during imperial times. Ultimately, Mao’s war against nature indicated a fundamental shift in the Chinese environmental conscious from considering nature as an empowered entity to an object controlled by the people. Today similar attitudes to Mao’s “war on nature” may been seen in the continued prioritization of economic growth over sustainable development, regardless of the environmental costs.

From the 1980s onwards, the Chinese consciousness towards environmental issues has been complicated by massive economic growth and increasing concerns over obvious environmental degradation. Economic growth and environmental protection in China are viewed as a zero-sum game; any economic gains will harm the environment while taking environmental protection measures will harm the economy. As a result, many local officials do not enforce environmental laws and protection measures. Officials either believe that such measures will deter economic growth or otherwise are prioritizing immediate economic prosperity over longer-term sustainable development. However this failure of local governments does not indicate low levels of environmental concern for the broader Chinese public. Since the 1980s, China has witnessed a rising degree of citizen involvement in addressing environmental issues, leading some to assert that a fledgling green public sphere has begun to emerge (Liehr, 2012). According to national statistics, the number of environment-related complaints filed by Chinese citizens to environmental authorities has increased over 30% since 2002, with roughly 50,000 environmental disputes taking place in 2005 alone (Yu, 2014). Additionally, Chinese NGOs have been expanding in both number and influence; many of these organizations receive most of their support from Chinese volunteers, indicating a rise in environmental friendly attitudes and environmentally friendly behaviors (Spires, 2014). Studies of environmental consciousness
among Chinese consumers have indicated that although consumer awareness of environmental issues is relatively high across the population, factual knowledge of environmental problems has remained low (Wang J., 2015). This is in keeping with the discussion of environmental knowledge in the previous chapter.

Currently, China faces instability in its financial sector, causing concern among economists over whether China’s exponential economic growth will be sustainable in the long term. Under the looming possibility of an economic crisis, Chinese people may more heavily consider the economic consequences of environmental protection leading to lessened support for environmental issues. In order to predict future changes in Chinese environmental views, it is imperative to understand historical environmental perspectives and the impact they have on the environmental consciousness of the Chinese people. Only by understanding the combined influences of dynastic philosophies towards nature, Mao’s extreme environmental degradation, and today’s perceived competition between environmental protection and economic success, is it possible to understand current environmental views held by Chinese people.

**Environmental Activism in China**

Chinese environmental activist movements are set apart by their unique choice of methods and their relationship to the Chinese government. China has benefited from a long tradition of civil society that has evolved and been adapted to address modern issues. Chinese activists, both as individuals and under the umbrella of an official organization, tend to adopt non-confrontational strategies by which they ally themselves with the central authority. That is to say Chinese environmentalists frame their issues and their own role as activists in terms of well-established socio-cultural tropes that underscore the legitimacy of their work vis-à-vis the government (Liehr, 2012). According to Liehr in his analysis of Xu Gang’s “Woodcutter Wake
Up!”, an example of environmental reportage literature written in 1986, the framing of the piece indicates the root cause of environmental degradation lies in corruption at the local level. Xu Gang assumes that if the central authority knew the full extent of the corruption and degradation that they would act in the best interests of the people and by addressing the issue (Liehr, 2012). By writing “Woodcutter Wake Up!”, Xu Gang is not criticizing the state or protesting the central authority. Instead he is fulfilling his duty as a morally conscious citizen by bringing the issue directly to the central government’s attention. Liehr describes this as a social and cultural tradition in China that originates from imperial times, when emperors were concerned about maintaining vertical communication pathways that allowed information to flow from the common people to the central government. In this way the emperor would have the full information necessary to issue appropriate policies that corresponded to the needs of the people (Liehr, 2012).

Since at least 1949, the Chinese state has restricted the organization of citizens in non-governmental organizations (NGOs) that have no strong relation to the state or the communist party (Xie, 2012). The Chinese government is very wary of collective action movements within the general public, more so than they are concerned with direct protests against the state (King, 2013). NGOs as collective action organizations outside the direct control of the government represent a perceived challenge and threat to the current party leadership. Strict controls have been placed on NGOs in China, including that they register with the government, maintain an office and full-time staff, and partner with a government-affiliated supervising agency that is ultimately responsible for their actions (Hatch, 2014). As many grass-roots organizations find the supervising agency criteria too difficult to meet, an unknown number of NGOs have chosen instead to register as businesses or not to register at all, creating discrepancies in official records.
The government’s strict regulation of NGOs and the collaborative behavior of environmental activists have presented the state with an opportunity to ground itself more fully in civil society. As an alternative to grass-roots NGOs, the government has founded government-organized non-government organizations (GONGOs), non-profit organizations which dominated China’s limited civil society up until the 1990s (Xie, 2012). Although GONGOs perform much of the same functions as NGOs, they are very tightly controlled by the government and could be considered an extension of the government into the activism realm (Hatch, 2014). Despite heavy restriction, the number of registered environmental NGOs in China began to dramatically increase in the mid-1990s, eventually coming to represent 46.8 percent of the total non-profit organizations in the environmental sector by 2005 (Xie, 2012). Due to their close ties to the government, environmental NGOs, like individual activists, use mostly non-confrontational activist methods. Most environmental NGOs are engaged in raising awareness on environmental issues and promoting environmental education; few if any engage in any adversarial lobbying behavior towards the government (Xie, 2012). By using non-confrontational strategies, environmental activists in China are protecting themselves from negative government attention. However, these strategies do not achieve immediate results; activists make the tradeoff between rapid environmental improvement and necessary self-protection.

In addition to literature and organizations dedicated to environmental activism, China has a long history of social protest, petition, and legal action. In what seems to be a unique characteristic of the authoritarian state in China, the government is somewhat tolerant of nonpolitical social protests and petitions (Chen, 2011). This flexibility regarding social protests has provided the public with a valuable method of voicing grievances without directly challenging the state. In China, a social protests and the “trouble-making” tactics employed by
protestors, have become a normalized aspect of civil society, allowing protestors to engage in long-term dialogues with local officials (Chen, 2011). Although social protest, legal action, and petition in China do not achieve instantaneous results, they are critical to opening avenues of information sharing between the authoritarian state and the people. Some of these avenues are more effective than others. Protests of environmental issues at the local level have the potential to attract attention from central level authorities, which may encourage local officials to bargain with protestors (Chen, 2011). Petitions and legal actions are long and protracted affairs that may be more readily dismissed by local governments or central authorities. In each case, the emphasis by the protestors is rarely confrontational against the central authority. By maintaining a collaborative view in protest, protestor and environmental activists alike protect themselves from backlash by the central government. Whether their demands are met depends on the results of extensive bargaining with local authorities (Chen, 2011).

Environmental activism in China is closely tied with the Chinese government. Because of this overlap between the political realm and civil society, all discussions of environmental activism in China must be based on understandings of the interactions between activists and the state. Non-confrontational strategies and even alliance with the central government may be employed by activists individually and in NGOs. Social protest and petition also have the potential to act as effective bargaining tools at the local level and open avenues of information flow to the central authorities. To the western perspective, these forms of activism may seem strange and ineffective. However, by being conscious of the historical and cultural influences on Chinese environmental activism, western scholars may come to better appreciate the origins of Chinese activism, its modern applications, and its possible future as an effective method of resolving environmental problems.
Chapter Three

Methodology and Structure of Survey Instrument

Research Goals

Nationally, air pollution in China represents a threat to continued economic growth and long-term sustainable development. Locally, the severity of air pollution has manifested in sweeping health and lifestyle impacts for residents in urban centers, contributing to premature death and restricting travel and outdoor recreation. Although an extensive framework for environmental regulation exists, poor implementation of laws at the local level have caused air pollution to remain a significant and persistent problem.

Chinese college students represent a generation of educated elites who will play a prominent role in solving the air pollution crisis. This research will explore how Chinese college students relate to air pollution and environmental activism in order to predict how this generation of students may address air pollution in the future. Framed as a pilot study, the goal of this research was not to test new hypotheses, but rather to discover trends among respondents and compare them to responses in previous studies. These studies, discussed briefly in the literature review, survey students in various locations between 1998-2014 and are primarily focused on issues of environmental awareness, education, and youth civic activism. By comparing responses of present day students in this study to similar studies conducted in the past, this research will offer perspectives on how opinions of Chinese college students towards environmental issues have evolved in the last two decades. Finally, based on this comparison, this research will speculate on how students will solve environmental issues in the future.
Method of Data Collection

This research was conducted as an anonymous online survey. The survey was distributed as a link to respondents via email. No personal identifiers were recorded; responses were assigned an anonymous identifier automatically through the online survey software. The survey was created and distributed through Qualtrics, an online survey tool available through the Odum Institute at UNC Chapel Hill. In addition to logistical help with Qualtrics, the Odum Institute also provided consultation regarding Atlas.it.7, the software used for the analysis portion of this research.

Description of Survey Instrument

Although the study was not intended to test specific hypotheses, the researcher did rely on several assumptions in her overall design of the survey instrument. These included:

(1) Open-ended questions would not limit responses or discourage response rates.

(2) Respondents, as college students who have studied abroad, would be able to understand questions in English and use English in their responses. The choice of language would not impact response rates.

Unlike previous studies of environmental awareness, this survey consisted primarily of open-ended response questions. The open-ended format was chosen to allow for the possibility of responses unforeseen by the researcher. Unlike multiple choice questions, open-ended questions do not constrain the survey responses to a limited number of possible answers. However, the open-ended format may have attributed to low response rates. Over 40% of respondents left at least half of the survey incomplete. Open-ended formats require the respondent to form a thoughtful answer, taking time and energy. As a result, the sections
gathering general demographic information and involving multiple choice questions had higher response rates of 74.96% and 63.64% respectively. In comparison, the open ended response sections had lower response rates that ranged from 55% in early sections to 26.99% in later sections. Any future survey-based research may rely more on multiple choice responses in order to encourage a higher rate of response.

This survey was conducted completely in English, and initially encouraged both English and Chinese responses. This was done in consideration of time constraints and the limitations of the researcher as a second language learner of Chinese. Rather than translate the entire survey into Chinese and risk mistranslation of the questions, the researcher chose to conduct the survey in English and translate any responses that were written in Chinese. This choice was based on the researcher’s assumption that the respondents, as college students who had studied abroad, would have a high proficiency in English. However, after reading the initial survey responses, it became apparent that the respondents were not comfortable enough in English to provide detailed responses. Response rates were very low and the English responses particularly lacked clarity. This lead to uncertainty about the intended meaning of some responses. The researcher emailed the respondents again, further encouraging them to use Chinese wherever they felt that they could not fully express themselves in English. This adaption of the survey instrument resulted in much higher response rates, with respondents providing much more detailed answers than they had initially. To avoid the problems resulting from language barriers in the future, the survey would likely be revised to be presented in Chinese and only accept Chinese responses.

The survey consisted of six sections: (1) General Demographic Information, (2) Educational Background, (3) Perspectives of Air Quality, (4) Reactions to Air Quality, (5) Participation in Environmental Activism, and (6) Methods of Improving Air Quality. A complete copy of the
survey instrument is included in the appendix. The survey questions were primarily designed by
the researcher, with logistical consultation from the Odum Institute at UNC Chapel Hill. In
designing the survey questions the researcher assumed:

1. Demographic and socio-economic factors have an impact on environmental attitudes.

2. Opinions of air quality are impacted by a respondent’s personal experiences.

3. The adoption of self-protection measures against poor air quality is an indicator of the
   respondent’s view of air quality in the region where they live.

4. Basic self-protection measures take on a finite number of possibilities.

5. Respondents have heard of the term “Environmental Activism” and understand its
   meaning in English.

6. Respondents make distinctions between types of activities that they consider
   environmental activism.

7. Respondents have opinions on what is good or “satisfactory” air quality, and have
   considered methods of achieving this level of air quality.

Sections 1 and 2, General Demographic Information and Educational Background,
collected general demographic and socio-economic information about the respondents. The
researcher adopted the assumption that socio-economic factors have a large influence
environmental attitudes. The information collected in these sections included age, gender, family
income, race, parents’ occupations, desired career post-graduation, hometown location,
university location, and primary area of study. This information was used to contextualize survey
responses as well as to compare these respondents to respondents in previous studies.
Section 3, Perspectives of Air Quality gathered information on respondent’s opinions towards current air quality conditions. In the design of this section, the researcher assumed that these respondents view of air quality would be influenced by their personal experiences. These included study abroad experience, air quality conditions in the respondent’s hometown and university, and perceived impacts of air quality on their health. These personal experiences provide useful insights into the conditions under which respondents have developed their opinions of air quality.

Section 4, Reactions to Air Quality, was a multiple choice formatted section that collected information on respondent’s behavior in reaction to air quality conditions. In designing this section, the researcher assumed that the adoption of self-protection measures by respondents was an indicator of their view of air quality in the region where they live. The researcher also assumed that basic self-protection measures have a finite number of possibilities and so used multiple choice questions rather than open ended response. Behaviors surveyed included using an air filter, wearing a pollution mask, and taking other precautions like avoiding outdoor activity. Though this section did not explore all the possible behaviors that respondents could have exhibited in reaction to air quality conditions, the information collected serves as an additional indicator of how respondents view air quality in their region.

Section 5, Participation in Environmental Activism, collected information regarding what respondents considered to be environmental activism, their current participation in environmental activism, their likely future participation in activism, and their support for environmental organizations. The researcher assumed that respondents make distinctions between types of activities that they consider environmental activism. Additionally, the researcher assumed that respondents would be familiar with the term “environmental activism”
and understand its meaning in English. However, many respondents were unclear about what environmental activism meant. This may be attributed to the language barrier, a lack of education on environmental activism, or a lack of clarity in the phrasing of the question. This section was the longest in the survey, consisting of eight questions, and had the lowest response rate at 26.99%. It is possible that the overall length of the survey contributed to low response rates in latter sections of the survey.

Section 6, Methods of Improving Air Quality, gathered information about who respondents felt should be responsible for improving air quality and what methods the responsible party should use. Respondents were asked to describe their own definition of good or “satisfactory” air quality and what methods individuals, governments, and industries should use to achieve this level of air quality. The goal of this section was to explore what methods respondents believe different actors should use to achieve better air quality. This information was used to determine how respondents would solve future problems of air pollution.

**Respondents**

The respondents to this survey were primarily students from Jiangsu Province in Eastern China. These students previously attended a study abroad program on merit based academic scholarships to Duke University the summer of 2015. Students spent three weeks at Duke University taking intensive college level classes and local field trips, followed by a week of educational visits to museums and college campuses in major U.S. cities. Their course of study was primarily devoted to cultural immersion. During their time at Duke University, the students were taught courses in urban cultural studies by the researcher’s thesis advisor, Dr. Robin Visser. With the permission of Dr. Visser, and program director Professor Kang Liu, of Duke University, the researcher contacted the survey respondents via email with an introduction to the
study, and a link to the online anonymous survey. In this initial email, the students were made aware that the researcher is Dr. Visser’s thesis student. This connection may have encouraged respondents to take the survey and contributed to the response rate. More in depth discussion of the respondents, including demographics and socio-economic status is included in chapter 4.
Chapter Four

Survey Results

The survey was designed as a pilot study exploring how today’s Chinese college students relate to air pollution and environmental activism. By comparing trends from this survey to previous studies of environmental awareness in Chinese college students, this research will speculate on how this generation of Chinese college students will solve air pollution and other environmental issues in the future. This chapter will present and discuss the results and major trends that emerged from this survey. To contextualize these results, this chapter will first analyze the air quality conditions of Jiangsu province and demographics of the surveyed population. This analysis will follow with a presentation of the survey results, major trends, and potentially significant findings.

Survey Population

Survey respondents ranged in age from 17 to 23 years, with 11 respondents who did not identify their age. 22 respondents identified as female, 10 as male, and 12 did not identify their gender. All respondents identified as Han, with no respondents identifying as an ethnic minority, and 15 respondents did not report their ethnicity. Of the respondents that identified their majors, 5 studied scientific fields, 9 studied social sciences, 4 were pursuing business or finance related disciplines, and 8 were studied humanities. 17 respondents did not report their major. Within Jiangsu, 7 respondents attended universities in Suzhou, followed by 6 in Nanjing, 4 in Nantong, and 2 or less in Xuzhou, Huai’an, Yangzhou and Lianyungang. 4 respondents attended university outside of Jiangsu province and 16 did not report where they attended university. All respondents had completed at least one year of college education.
The population surveyed primarily consisted of college students from Jiangsu province. Of the total 44 responses, 25 respondents claimed hometowns in Jiangsu compared to 5 respondents who had hometowns in other provinces. 10 respondents did not identify their hometown. Jiangsu is located on the eastern coast of China and is bordered by the provinces of Anhui, Shandong, and Zhejiang. The city of Shanghai is located just past Jiangsu’s southeastern border. Jiangsu is one of China’s smaller provinces, composing only 1.06% of the nation’s total land area. Jiangsu is located in a transition area between China’s subtropical and temperate climates. As a result, weather in the northern portion of the province is much closer to temperate climates with four distinct seasons, while weather in the south is more subtropical and experiences a monsoon season (Zhongguo Jiangsu Yingwen Ban, 2011).

Air pollution remains a significant problem across China, and poor air quality continues to impact the health and welfare of the Chinese people. However, emissions of key pollutants have been decreasing in recent years, thanks to the attention and regulation of the government. Jiangsu is no exception to this trend. In fact, Jiangsu is performing better than national averages, experiencing decreases in emissions above national levels in 2013 and 2014 (Ministry of Environmental Protection of the People's Republic of China, 2016). Table 1 below demonstrates the percent reduction in emissions in Jiangsu in comparison with national levels from 2012 to 2014.
Considering only emissions of these pollutants, Jiangsu’s air quality is improving at a faster rate than national air quality. However, concentrations of pollutants in Jiangsu remain at concerning levels compared to world standards. The World Health Organization sets standards of air quality based on pollution levels that are considered detrimental to human health. In its most recent recommendations, the WHO recommended that average exposures to SO\(_2\) and NO\(_2\) not exceed 20 µg/m\(^3\) per 24 hours and 40 µg/m\(^3\) per year, respectively (World Health Organization, 2005).

In 2013, Jiangsu’s capital Nanjing experienced annual average concentrations of 37 µg/m\(^3\) SO\(_2\) and 55 µg/m\(^3\) NO\(_2\), well above WHO recommendations (National Bureau of Statistics of China, 2014). Although Jiangsu’s air quality may be better than national averages, the province can still be considered heavily polluted.

In order to interpret the survey responses, it is important to understand the economic welfare of respondents in comparison to other residents in Jiangsu and to national averages. Table 2 offers a comparison between Jiangsu’s economic conditions and national levels in 2013.

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**Table 1: Percent Reduction in Emissions of Key Pollutants in Jiangsu Province and at the National Level**

<table>
<thead>
<tr>
<th></th>
<th>Change in Ammonia Nitrate Emissions (%)</th>
<th>Change in Sulfur Dioxide Emissions (%)</th>
<th>Change in Nitrogen Oxide Emissions (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2012-2013</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jiangsu Province</td>
<td>3.72</td>
<td>5.07</td>
<td>9.57</td>
</tr>
<tr>
<td>National Level</td>
<td>2.93</td>
<td>3.12</td>
<td>4.72</td>
</tr>
<tr>
<td><strong>2013-2014</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jiangsu Province</td>
<td>3.32</td>
<td>3.93</td>
<td>7.87</td>
</tr>
<tr>
<td>National Level</td>
<td>2.9</td>
<td>3.4</td>
<td>6.71</td>
</tr>
</tbody>
</table>

*Data via the National Bureau of Statistics of China

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30
In 2013, Jiangsu was the 5th most populous province in China, with a total population of 73.3 million people (National Bureau of Statistics of China, 2014). Despite being so populous, per capita GDP in Jiangsu is much higher than national levels. Average annual wages of urban employees are 5,694 RMB higher in Jiangsu than at the national level. Given these measures, residents of Jiangsu appear to be wealthier than the national average. Survey respondents who reported incomes are wealthier when compared to average income in both Jiangsu and nationally. Respondents reported their monthly family income in the following ranges: 0-3,000 RMB, 3,000-7,000 RMB, 7,000-10,000 RMB, 10,000-20,000 RMB, and over 20,000 RMB. Table 3 below describes the spread of income responses, indicated in both RMB and USD, and calculated over 12 months to describe annual incomes.

<table>
<thead>
<tr>
<th>Number of Respondents</th>
<th>Monthly Family Income in RMB</th>
<th>Monthly Family Income in USD</th>
<th>Annual Family Income in RMB</th>
<th>Annual Family Income in USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>0-3,000</td>
<td>0.459.84</td>
<td>0.36,000</td>
<td>0.5,518.13</td>
</tr>
<tr>
<td>5</td>
<td>3,000-7,000</td>
<td>459.84-1,072.97</td>
<td>36,000-84,000</td>
<td>5,518.13-12,875.64</td>
</tr>
<tr>
<td>8</td>
<td>7,000-10,000</td>
<td>1,072.97-1,532.81</td>
<td>84,000-120,000</td>
<td>12,874.64-18,393.77</td>
</tr>
<tr>
<td>11</td>
<td>10,000-20,000</td>
<td>1,532.81-3,065.63</td>
<td>120,000-240,000</td>
<td>18,393.77-36,787.53</td>
</tr>
<tr>
<td>4</td>
<td>Over 20,000</td>
<td>Over 3,065.63</td>
<td>Over 240,000</td>
<td>Over 36,787.53</td>
</tr>
</tbody>
</table>

*Converted at an exchange rate of 1 USD : 6.52 RMB, accurate as of March 6th 2016.
Calculating monthly family income over a year allows comparisons of the respondent’s income to averages in Jiangsu and across the nation. From Table 2, the average annual income of urban employees is 57,177 RMB in Jiangsu and 51,483 RMB nationally (National Bureau of Statistics of China, 2014). Compared to average annual urban income levels, at least 69.7% of respondents live in households that earn incomes above provincial and national averages. 23 of 33 respondents who reported incomes come from households that earn between 1.4 to 4.2 times the provincial average, and 1.6 to 4.8 times the national average income.

**Survey Results**

In analyzing the survey data, the researcher sought to answer the following questions as they pertain to the perspectives of Chinese college students on air pollution and environmental activism:

1. How do respondents view air quality?
2. How do perceived impacts of air quality on respondent’s daily life effect:
   a. Overall satisfaction with air quality
   b. Current and future participation in environmental activism
   c. Support of environmental groups
3. What are the common qualities that respondents associated with environmental activism?
4. Who do respondents feel is primarily responsible for causing current air quality conditions?
5. What methods do respondents think should be used to solve air pollution?
**Views of Air Quality**

Respondents were asked to describe air quality in their hometown and at their university. Their descriptions were then labeled as positive, neutral, or negative. Next, the respondents’ overall views of air quality were summarized through a count of the number of positive, neutral, and negative statements that they made.

In total, respondents made 50 statements on air quality. Table 4 below describes the number of positive, neutral, and negative statements made by respondents across sociodemographic variables, including gender, major or academic concentration, and monthly family income.

<table>
<thead>
<tr>
<th>Table 4: Views of Air Quality Across Social Demographic Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality Negative View</td>
</tr>
<tr>
<td>Female (22 Respondents)</td>
</tr>
<tr>
<td>Male (10 Respondents)</td>
</tr>
<tr>
<td>Major, Business and Finance (3 Respondents)</td>
</tr>
<tr>
<td>Major, Humanities (10 Respondents)</td>
</tr>
<tr>
<td>Major, Science (5 Respondents)</td>
</tr>
<tr>
<td>Major, Social Science (8 Respondents)</td>
</tr>
<tr>
<td>Monthly Family Income, 0-3000 RMB (5 Respondents)</td>
</tr>
<tr>
<td>Monthly Family Income, 3000-7000 RMB (5 Respondents)</td>
</tr>
<tr>
<td>Monthly Family Income, 7000-10,000 RMB (8 Respondents)</td>
</tr>
<tr>
<td>Monthly Family Income, 10,000-20,000 RMB (10 Respondents)</td>
</tr>
<tr>
<td>Monthly Family Income, Over 20,000 RMB (4 Respondents)</td>
</tr>
</tbody>
</table>

*This data is affected by low response rates. Answers labeled “no response” were not included in this analysis. The numbers in parenthesis to the right of each category demonstrates how many respondents are in each category.

Across genders, 56.4% of female statements on air quality were negative, compared to 45.5% of male statements. As a percentage of their total responses, male respondents made slightly more positive statements at 18.2%, while only 12.2% of female responses were positive.
Regarding statements of air quality, females appear to view air quality more negatively than males. This may possibly indicate a slightly greater concern for the environment or a higher environmental awareness among females as opposed to their male counterparts in this survey.

Across academic disciplines, the statements on air quality were largely negative. Humanities and business majors made few, if any positive statements on air quality, tending towards negative statements. Science and social science majors also tended towards negative statements. However, a greater percentage of statements made by science and social science majors consisted of positive statements, 30% and 18.8% respectively. In comparison, 6.3% of humanities majors made positive statements on air quality, while no business majors made positive statements. Given that science and social science majors are likely to have high scientific environmental knowledge compared to non-science majors, the number of positive statements by respondents in these two disciplines is noteworthy. While more research is needed to confirm the causes of this trend, it is possible that some factors of scientific education have contributed to more positive views of air quality in respondents who major in science or social science fields. For science majors, the lack of humanities elements in their education may narrow their perspectives on environmental and social contexts. This may cause them to be unaware of the broad impacts of poor air quality. Alternatively, science and social science majors may receive a much more comprehensive and detailed education on the environment and the progress made in addressing environmental issues. Because they are better informed of the progress made in solving air pollution, they may view air quality with more optimism.

Summarized across all income brackets, respondents made negative statements 5.4 times more often than positive statements. Considering separate income brackets, respondents who come from households earning 3,000 RMB or less per month made more neutral statements than
positive or negative statements. Respondents who reported monthly family income between 7,000 to 10,000 RMB made an equal number of negative and neutral statements. Respondents who reported monthly family income of at least 10,000 RMB or more all made mostly negative statements of air quality. This may indicate that higher income contributes in some way to willingness to make negative statements on air quality. Those respondents who come from households earning less than 3,000 RMB may be influenced by precarious economic conditions which may them unwilling to make negative statements on air quality. Alternatively, these respondents may not view air quality as the most urgent problem relating to their personal welfare, and may make neutral statements because they find other problems more concerning and relevant to their lives. This relationship between income level and concern with environmental degradation is reflected in theory behind the Environmental Kuznets Curve (EKC). The EKC theorizes that people living below a certain income threshold are “too poor to be green”; that is this segment of the population is not concerned with environmental protection because they face immediate economic threats (Stren, 2004). The results of this survey do appear to follow the EKC theory; respondents who reported lower incomes also made fewer negative statements on air quality. However, it is important to recognize that the EKC has come under criticism in recent years as a universal model of relationships between income and environmental protection. Evidence within the last decade show that developing nations, possibly taking lessons from the industrialized world, are highly concerned with the environment and are addressing environmental issues at level above ECK predictions for nations with low GDP per capita (Stren, 2004). With regard to Chinese college students specifically, this high level of environmental concern has been demonstrated by previous studies of environmental attitudes and awareness in college students (Wong, 2003; Hong, 2011; Kong, 2014). The correlation between wealth and
environmental concern found in this survey is well supported by the EKC theory. However, this survey also demonstrates, like other studies before it, that Chinese college students across socio-demographic factors have a high level of environmental concern. It is possible that the effects of low income on environmental perspectives are slightly off-set by environmental education or perceived harm resulting from living in heavily polluted conditions. Further research is needed to determine the degree of influence that income has over the environmental views of Chinese college students.

*Perceived Impacts of Air Quality on Daily Life*

Respondents were asked to describe how they felt air quality impacted their daily lives. These impacts were then labeled as health impacts, mental impacts, and mobility impacts. Health impacts included both symptoms of physical illness caused by air pollution and restricted access to outdoor exercise. Mental impacts included feelings of concern, worry, bad mood, discomfort, and irritation. Mobility impacts included statements about restricted ability to travel safely, such as when respondents felt that poor air quality prevented them from going outside. Some overlap between health impacts and mobility impacts is present with regards to respondents who reported that they do not exercise outside under poor air quality conditions, which falls under both categories of mobility and health impacts.

| Table 5: Satisfaction with Current Air Quality Given Perceived Impacts of Air Quality |
|----------------------------------------|------------------|-------------|-----------------|--------------------------|
|                                        | Health Impact | Mental Impact | Mobility Impacts | Total Statements on Impacts of Air Quality across Satisfaction |
| Current Air Quality is NOT Satisfactory (9 Respondents) | 7 | 4 | 3 | 14 |
| Current Air Quality is Satisfactory (2 Respondents) | 1 | 0 | 0 | 1 |

*This data is affected by low response rates. Answers labeled “no response” were not included in this analysis. The numbers in parenthesis to the right of each category demonstrates how many respondents are in each category.*
Table 5 summarizes statements of perceived impacts of air quality across whether a respondent reported that they were satisfied with current air quality. Satisfaction with air quality was defined as a respondent who was content with current air quality conditions and did not perceive a need to improve air quality. The majority of respondents to this survey felt that air quality was not satisfactory. Those respondents who did not feel satisfied with current air quality conditions also reported the highest number of statements on perceived impacts of air quality on their daily lives. Of those satisfied with air quality, only one statement was made regarding perceived impacts of air quality on daily life. Thus it is apparent that perceived impacts of air quality on daily life are good indicators of satisfaction with current air quality.

In addition to the relationship of perceived impacts of air quality and satisfaction with air quality, this research also sought to analyze how perceived impacts of air quality influence participation in environmental activism. Table 6 below summarizes statements of perceived impacts of air quality across self-reported participation in environmental activism and support of environmental groups. The table also includes the number of statements of perceived impact across the likelihood of future participation in environmental activism.

<table>
<thead>
<tr>
<th>Table 6: Participation in Environmental Activism Given Perceived Impacts of Air Quality</th>
<th>Health Impact</th>
<th>Mental Impact</th>
<th>Mobility Impacts</th>
<th>Total Statements of Impact by Participation and Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does NOT Participate in Environmental Activism (11 Respondents)</td>
<td>8</td>
<td>7</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Participates in Environmental Activism (2 Respondents)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Future Participation is Likely (3 Respondents)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Future Participation is Possible (7 Respondents)</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Future Participation is Unlikely (6 Respondents)</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Supports Environmental Groups (3 Respondents)</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Does Not Support Environmental Groups (11 Respondents)</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Total Statements of Impacts by Impact Category</td>
<td>23</td>
<td>22</td>
<td>10</td>
<td>55</td>
</tr>
</tbody>
</table>
Participation in environmental activism was notably low, with only 2 respondents currently participating in some form of environmental activism compared with 11 who do not participate and 31 who did not respond with their participation. In total, 21 statements of perceived impact of air quality were made by those who reported their participation in environmental activism. Of these statements, 90.5% were made by those who do not participate in environmental activism, indicating that perceived impact of air quality on daily life is not a positive indicator of participation in environmental activism. This raises interesting questions about the motivation of those respondents who do participate in environmental activism. If their participation is not a clear result of perceived harms or impacts of pollution on their lives, then what is driving those two respondents to engage in environmental activism? Further, given that students who do not participate in activism reported higher levels of perceived impact from air pollution, what is preventing those eleven students from participating in activism? The analysis of student concepts commonly associated with environmental activism in the following section may offer some insights into these questions.

The likelihood of future participation in environmental activism categorized as likely, possible, and unlikely. Sixteen respondents answered this question about future participation, while 28 respondents did not respond. The spread of respondents who answered this question was skewed towards possible and unlikely participation in environmental activism, with only 3 respondents indicating that they were likely to participate in environmental activism in the future. Statements of perceived impact by these 3 respondents were split between health and mental impacts, with few statements regarding mobility impacts. 7 respondents indicated that they might participate in
environmental activism in the future, but they had no definite plans to do so. Statements of perceived impact by these respondents spread more evenly, with 40% indicating health impacts, 33.3% indicating mental impacts, and 26.7% indicating mobility impacts. 6 respondents reported that they were unlikely to participate in environmental activism. Notably, 66.7% of statements of perceived impact by this group indicated mental impacts, and 33.3% of statements indicated health impacts. Mental impacts, such as worry and concern resulting from poor air quality, appear to be inversely correlated with the likelihood of future participation in environmental activism. More mental impacts were reported by those who are unlikely to participate in activism than those who were likely to participate.

Support for environmental groups was also low, with only 3 respondents reporting that they support environmental groups. Only 14 respondents in total answered this question about supporting environmental organizations. Of those 3 respondents who supported environmental groups, 50% indicated that they experience some mental impact that they attribute to current air quality. In comparison, 40% of those who did not support an environmental group reported experiencing some mental impacts. Mental impacts of air quality include statements that expressed worry and concern, or discomfort and a bad mood that results from poor air quality. The higher incidence of perceived mental impact among those who support environmental organizations could indicate that mental impacts of pollution are correlated with more willingness to support environmental organizations.

*Concepts Commonly Associated with Environmental Activism*

In the latter half of the survey, respondents were asked questions regarding their perspectives of environmental activism. First they were asked to define environmental activism. They were then asked if they considered indirect actions, such as environmental education, civic
activity, and community service to be environmental activism. Finally, respondents were asked if they viewed protest and petition to be environmental activism. Combined, these three questions create a well-rounded perspective on how this group of Chinese college students view environmental activism. Within responses to these questions, several concepts frequently emerged as associated with environmental activism:

1. Environmental activism as collective action

Responses in this category viewed environmental activism as a collective responsibility and emphasized group actions to improve environmental conditions. This should be understood separately from environmental activism as social demonstration or protest, which was not a commonly held view.

2. Environmental activism as raising environmental awareness

These responses considered raising environmental awareness and discussing environmental issues to be vital parts of environmental activism. Notably this are passive forms of action distinct from direct actions such as litigation or appeals to local governments.

3. Environmental activism as environmental protection

Environmental protection was broadly defined and used by respondents in their definition of activism. Environmental protection was considered a very important part of environmental activism, however few respondents, if any, defined what they meant by protection.

4. Issues with environmental activism in China specifically
Many respondents felt that environmental activism was a viable solution to environmental issues in other countries, but for various reasons was not possible within China. This category includes the many issues that respondents considered as problems of activism within a Chinese context.

5. Objections to environmental activism

Some respondents felt that environmental activism is ineffective and does not address the root of pollution problems in China. Others felt that environmental activism was at odds with their personal beliefs, though these beliefs were not defined. This category contains all objections to environmental activism, excluding issues related specifically to activism in China.

6. Obstacles to participation in environmental activism

This category included things that respondents felt were a barrier to their participation in environmental activism, including lack of opportunity and lack of time.

7. Unclear what environmental activism is

This category captured any responses with regards to environmental activism where respondents did not know what environmental activism was or had never been exposed to the concept.

By evaluating respondents’ definitions of environmental activism, their views of environmental activism may be better understood. Figure 1 below offers a visual perspective of the above enumerated concepts as they occurred within respondent’s definitions of environmental activism, represented by selected quotations from survey responses. Translations of Chinese text may be found in the appendix. As demonstrated in Figure 1, four out of ten definitions offered by respondents included the concept of environmental protection. Expanding on this concept, one respondent stated in their definition that all people should be “obligated” to
protect the environment, and that development should not come at the cost of environmental
degradation. By defining environmental activism as an individual responsibility towards
environmental protection, this respondent emphasizes both the high value they place on
environmental quality and the necessity of individual action to improve environmental
conditions. Despite strong opinions in favor of environmental protection, none of the respondents
who defined environmental activism as actions to protect the environment specified what actions
should be taken to achieve better environmental protection. The overall lack of specificity in
terms of how to exercise environmental protection demonstrates a limited understanding of the
term. It appears that these four respondents are equating environmental activism and
environmental protection without regard for the nuances of each term.

Concepts commonly associated by respondents with environmental activism may affect
participation in environmental activism. Figure 2 is a visual outline of how concepts associated
with environmental activism were distributed among respondents who did or did not participate
in activism. As indicated in the figure, respondents who currently participate in environmental
activism identified environmental activism with raising environmental awareness and
environmental protection, while respondents who do not participate in activism cited many
obstacles and problems with environmental activism in their definition of the term. Issues of
activism in China, objections and obstacles to participating in environmental activism,
environmental activism as collective action, and uncertainty about what is environmental
activism were all concepts cited exclusively by those who do not participate in environmental
activism. Figure 2 indicates that for those who participate in environmental activism,
environmental protection and raising environmental awareness seem to be more important than
obstacles to participating in activism or engaging in collective action.
Recalling Table 6, participation in environmental activism among respondents was very low, with only two of thirteen respondents participating in what they considered environmental activism. The figures in Table 6 also raised questions about why the majority of students are not motivated to participate in environmental activism, given that they report a higher perceived impact of pollution on their lives. By considering the concepts that students who did not participate associated with environmental activism, it is possible to gain insight into their motivations for not participating. Figure 3 below focuses on respondents who do not participate in environmental activism, expanding on concepts associated with environmental activism with details from selected quotations. Those who do not participate in environmental activism felt that environmental activism is ineffective and “cannot solve the problem at its root.” They also noted political and social problems with activism, stating that “this method will not work in China.” Respondents also stated that they had difficulty participating in activism, due to a lack of opportunity in their area or a shortage of time and money to contribute to activism movements. These respondents might participate in environmental activism if presented with the opportunity, however they lack an awareness of opportunities to participate. These barriers discussed by students who did not participate in activism may explain why students who reported higher levels of perceived impact from pollution do not participate in activism to address air quality.
Figure 1: Concepts Commonly Associated with Environmental Activism within Definitions of Environmental Activism
Figure 2: Concepts Commonly Associated with Environmental Activism distributed over Environmental Activist Participation
Figure 3: Detailed View of Concepts Commonly Associated with Environmental Activism by Respondents Who Do Not Participate in Environmental Activism
Responsibility for Causing Current Air Quality Conditions

In the latter portion of the survey, respondents were asked who they felt was responsible for creating current air quality conditions. Respondents were labeled and placed in three categories depending on what agent they felt was responsible: (1) Government, (2) Humanity, including both individuals and society, and (3) Industry and Economic Conditions. Respondents’ answers were also labeled with the factors that they felt have contributed to current air quality: economic growth, government corruption, high emissions, ineffective regulations, low public environmental awareness, personal habit, and personal vehicle usage. Table 7 below illustrates the number of statements on contributing factors across the agents that respondents’ considered responsible for current air quality conditions.

Table 7: Factors Contributing to Current Air Quality Conditions across Agents Responsible

<table>
<thead>
<tr>
<th>Factors Contributing to Current Air Quality Conditions</th>
<th>Agents Responsible for Causing Current Air Quality Conditions</th>
<th>Government</th>
<th>Humanity (Individuals and Society)</th>
<th>Industries and Economic Conditions</th>
<th>Total Number of Statements by Contributing Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Growth and Development</td>
<td></td>
<td>6</td>
<td>0</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Government Corruption</td>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>High Emissions</td>
<td></td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Ineffective Regulation</td>
<td></td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Low Public Environmental Awareness</td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Personal Habits</td>
<td></td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Personal Vehicle Use</td>
<td></td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total Number of Statements by Agent</td>
<td></td>
<td>14</td>
<td>5</td>
<td>16</td>
<td>35</td>
</tr>
</tbody>
</table>

* This data is affected by low response rates. Answers labeled “no response” were not included in this analysis. The numbers in parenthesis to the right of each category demonstrates how many respondents are in each category.

Respondents were relatively evenly spread across agents responsible. Nine respondents viewed the government as responsible, eight viewed humanity as responsible, and nine viewed industry as responsible. Overall it appears that this group of respondents did not have strong opinions as to who is primarily responsible for causing current air quality, but instead consider these three
agents equally responsible. While respondents were evenly distributed among the agents, the number of statements made by respondents varied greatly depending on which agent they considered responsible. Each statement represents a quotation regarding factors that have contributed to current air quality conditions. Those respondents who believed the government or industry to be responsible for causing current air quality made fourteen and sixteen statements, respectively. In comparison, respondents who believe humanity to be responsible only made 5 statements, and their statements were concentrated under personal habits and personal vehicle use. Respondents who believed the government to be responsible made more statements on ineffective regulation and economic growth than any other factor contributing to current air quality. Those who believed industry to be responsible made more statements on high emissions and economic growth. Across all factors contributing to air quality, economic growth had the largest number of statements at 42.85% of total statements. Ineffective regulation had the second largest number of statements at 17.14% of total statements. Though respondents feel that humanity, government, and industry are all equally responsible for creating current air quality conditions, it appears that they consider economic growth as the main contributing factor to poor air quality.

Methods of Improving Air Quality

In the final portion of the survey, respondents were asked who they felt should be responsible for improving air quality. Similar to questions in previous sections, respondents were then group based on whether they felt governments, humans, or industries should be primarily responsible for improving air quality. Respondents were also asked what actions individuals, industries, and the government should take to improve air quality. Their responses were then labeled with the various methods they felt should be used to improve air quality. Table 8 shows
the number of statements regarding methods of improving air quality across the agents’ respondents felt should be responsible for improving air quality. The table also illustrates the agents who respondents considered responsible for causing current air quality conditions across the agent that respondents felt should be responsible for improving air quality. This section of the table only accounted for respondents who made statements on both responsibility for causing and responsibility for improving air quality. Respondents that answered one section, but not the other were not included in this portion of the table.

<table>
<thead>
<tr>
<th>Methods of Addressing Air Pollution:</th>
<th>Government Should Improve Air Quality</th>
<th>Humans (Individuals and Societies) Should Improve Air Quality</th>
<th>Industries and Economics Should Improve Air Quality</th>
<th>Total Number of Statements by Methods and Responsibility for Causing Current Air Pollution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing Personal Habits to Solve Air Pollution</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Changing Personal Vehicle Use to Solve Air Pollution</td>
<td>9</td>
<td>9</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Collective Action Solutions to Air Pollution</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Economic and Industry Solutions to Air Pollution</td>
<td>9</td>
<td>10</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>Increasing Environmental Awareness to Solve Air Pollution</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Regulatory and Legal Solutions to Air Pollution</td>
<td>9</td>
<td>7</td>
<td>2</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Responsibility for Causing Current Air Pollution:</th>
<th>Government Caused Current Air Pollution</th>
<th>Industry Caused Current Air Pollution</th>
<th>Humans Caused Current Air Pollution</th>
<th>Total Number of Statements by Methods and Responsibility for Causing Current Air Pollution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Caused Current Air Pollution</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Industry Caused Current Air Pollution</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Humans Caused Current Air Pollution</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>

*This data is affected by low response rates. Answers labeled “no response” were not included in this analysis. The numbers in parenthesis to the right of each category demonstrates how many respondents are in each category.

Of the three agents, most respondents felt that the government should be primarily responsible for improving air quality. Nine of seventeen respondents felt that the government should be responsible for improving air quality, six of seventeen felt that humanity should be responsible, and only two of seventeen felt that industries should be responsible. Of the total number of statements on methods of addressing air pollution, 29.16% economic or industrial solutions constituted 29.16%, reducing personal vehicle usage constituted 26.79%, and regulatory or legal solutions constituted 25%. Interestingly, economic and industrial solutions to air pollution took

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up the largest proportion of total statements, while only two respondents of seventeen felt that industries should be responsible for improving air quality. In fact, it was respondents who felt that humans should be responsible for improving air quality who made the highest number of statements about economic and industrial solutions to air quality, ten of twenty-one statements. This may indicate that respondents are view economic solutions to be more closely related to consumer actions or to government oversight. Few respondents seemed to believe that industries have the authority or the incentive to reduce their emissions voluntarily. Statements on economic solutions often called for closer government supervision or closing polluting factories, rather than relying on a solution from the industries themselves.
Chapter Five

Significance of Survey Results

The focus of this research was to explore the environmental awareness and behaviors of this generation of Chinese college students with regards to air pollution and participation in environmental activism. By understanding their current views of air pollution and environmental activism, this research hopes to predict how this generation of educated elites will address air pollution in the future. Chapter 4 outlined important trends and results from the survey. This chapter will discuss the broader significance of these results with respect to both previous studies in this field and the future potential impact of Chinese college students on solutions to air pollution. The chapter will begin with a comparison of these survey results to previous studies, building a timeline of environmental awareness and behaviors in Chinese college students. The chapter will then use this timeline to make predictions regarding future trends of environmental awareness and participation in environmental activism among Chinese college students. Finally, this chapter will conclude with a discussion of the significance of these predictions and potential for future research.

Timeline of Environmental Awareness and Behavior in Chinese College Students

This chapter will return to the four studies specific to China that were discussed in chapter one to form the basis for building a timeline of environmental awareness and behavior in Chinese college students. These four studies were conducted between 1998 and 2014, and focus on groups of students in specific cities across China. Because of differences in survey population and geographic location, results from these studies cannot be directly compared. Yet taken
together, these studies form a general image of how environmental attitudes of Chinese college students have changed over time.

The earliest of these studies was Wong’s survey of environmental attitudes in Beijing university students, conducted in 1998 and published in 2003. This was a comprehensive study of 350 students from ten universities in Beijing. The study was evenly divided by gender, with 51% males and 49% female. Most respondents were undergraduate students, however some masters and doctoral students also participated. The results found that students believed water pollution to be the most urgent environmental issue present in China, with deforestation being the second most urgent issue, and urban air pollution being the third most urgent. 93% of students ranked urban air pollution as an “urgent” or “very urgent” problem (Wong, 2003). In his analysis of survey results Wong found these students to be very conscious of the seriousness of environmental degradation, and that their views of urgent environmental issues were similar to views held by the general public. Students were also asked who they felt should be responsible for cleaning up the environment. 43.3% of students believed that local governments should be held responsible and 22.6% felt that the central government should be responsible. Only 5.7% of students felt that the general public should be responsible for cleaning up the environment. In terms of methods of addressing environmental problems, 56.6% of students felt that strengthening policy implementation would be the most important factor in improving environmental quality, while 12.3% of students felt that raising environmental awareness through education was the most important approach. Only 2.9% thought that encouraging public participation was vital to addressing environmental issues. Student participation in environmental protection campaigns were also low, with only 1.7% of students actively participating in some type of program or organization. In comparison 12.6% of students said that
they were uninterested in participating and 81.4% said that they did not participate, but were interested in participation (Wong, 2003).

Following Wong’s study, Jinliang conducted a study of environmental awareness and education in primary and high school students in Kunming. The study was conducted from 1998 to 1999 and published in 2004. 1,179 students were surveyed. Overall students demonstrated a high awareness of environmental issues and high willingness to participate in environmental protection activities organized by their schools. However, these students had a low scientific knowledge of environmental issues, and appear to draw their information on environmental issues from media and other sources outside the classroom (Jinliang, 2004). Similar to Wong’s study, these students also found water quality to be the most urgent environmental problem to be addressed. It is possible that water quality was viewed as a major issue in these studies because of the geographic location where the survey was conducted. Beijing has a very arid climate and water scarcity is a difficult issue for the city. Kunming is the capital of Yunnan, one of China’s most biodiverse and well protected environments. Water quality is an important issue in both these locations, perhaps more so than other areas.

Moving ahead to 2011, Hong conducted a comparative study of environmental knowledge and attitudes in Shanghai and Gansu students aged 16 to 20. The survey data for this study as collected in 2007, and the analysis was published in 2011. In terms of urgent environmental problems, both Shanghai and Gansu students considered water pollution to be the most urgent problem, followed by global warming as the second most urgent, and air pollution as the third most urgent. Students in both locations had very environmentally friendly attitudes, but appeared to think more globally than locally, as seen with their ranking of global warming at the second most urgent environmental problem. Students were also asked a series of questions
regarding their environmental behaviors and their willingness to engage in environmentally friendly behaviors in the future. Shanghai students had a higher participation rate in environmentally friendly behaviors than Gansu students, and also had a higher willingness for to participate in the future. Hong states that regional differences in standard of living could account for these responses. A higher standard of living could indicate more flexibility to engage in environmentally friendly behaviors; people with higher incomes are more willing to pay for environmental protection (Hong, 2011).

In 2014, Kong published a study of environmental awareness in Shanghai college students. Based off of Wong’s earlier study of Beijing students, this study surveyed 753 students, the majority of whom were science and engineering majors. 63% of surveyed students were male and 37% were female. The majority of students were undergraduates. Students were also divided into three categories by monthly family income level: 0-3,000 RMB, 3,000-6,000 RMB, and Over 6,000 RMB. Kong used this division system based off of the average family income status of 6,000 RMB per month reported by the 2012 China Statistical Yearbook (Kong, 2014). In terms of urgency, urban air pollution was rated as the most urgent issue, followed by water pollution. This marks a shift from earlier studies which consistently ranked water pollution as the most urgent issue. The female portion of this survey also responded with higher urgency rankings than the male portion, which Kong interpreted as females having a higher level of concern for environmental issues. Overall, 63% of participants felt that environmental protection should be prioritized over economic growth, another shift from the Beijing study where students felt that economic growth should take precedence over environmental issues. Students from lower income brackets placed less priority on environmental concerns than students from higher income brackets. In terms of responsibility to protect the environment, 65% of students felt that
the government should be responsible and 50% felt that industries should be responsible. Only 19% of students felt that the general public should be responsible (Kong, 2014). In comparison to Wong’s study, more students felt that the general public should be responsible for environmental protection, up from 5.7% (Wong, 2003).

Comparisons and Predictions

This survey of Chinese college students differed significantly from the previous studies outlined above. Unlike previous studies, this survey was given in English and conducted over an entire province as opposed to a specific city. As such, this study cannot make direct regional comparisons to previous work in this field. This survey was also primarily comprised of open-ended questions, as opposed to Likert scale questions, and surveyed a much smaller population of only 44 respondents. Despite these differences, some general comparisons may be made between this study and others.

As with previous studies, students responding to this survey demonstrated a high level of concern with environmental issues. Previous studies relied on a Likert scale report of the environmental issues that students viewed with the most urgency, with 1 being “not urgent” and 5 being “very urgent.” In Wong’s 1998 study, seven of the twelve issues presented averaged above 4.0 on the scale and no issues averaged below 3.5 (Wong, 2003). In Kong’s study 2014 study, all of the seven issues presented averaged above a 3.2 using the same scale (Kong, 2014). This survey did not use the Likert scale to describe environmental concern across multiple issues because it was focused singularly on the issue of air pollution. However, respondents’ answers regarding their views of air quality in their hometown and universities suggest similar levels of environmental concern. Summarizing responses across both genders, 54% of statements regarding air quality were negative, 32% of statements were neutral, and only 14% of statements
were positive. Generally, this survey appears to follow the trend of its predecessors in indicating a high level of environmental awareness in Chinese college students.

Evidence from studies in this field, including this survey, have indicated that income level has a significant influence on concern with environmental issues. As discussed in chapter 4, respondents to this survey who earned a monthly income below 3,000 RMB made more neutral statements on issues of air quality. Respondents in higher income brackets demonstrated greater concern through more negative statements on air quality. These results are reflective of the logic behind the environmental Kuznets curve (EKC), which models the hypothesis that people living below a certain income threshold are less inclined towards pro-environmental attitudes because they face more immediate threats to their welfare (Stern, 2004). Hong found this discrepancy of responses based on income level in his comparison of Shanghai and Gansu students, where students who experienced a higher standard of living in Shanghai had more environmentally friendly behaviors and attitudes than students in Gansu (Hong, 2011). Kong also noted this trend in his results, stating that students from households earning less than 3,000 RMB per month had a tendency to prioritize economic development over environmental protection (Kong, 2014).

While the results of these surveys indicate that income does influence environmental concern, the broader theories behind the EKC have been called into question. Stern notes that in the last decade developing nations have been shown to have a high level of environmental concern and awareness. In her documentary “Under the Dome” Chai Jing also advises that developing nations like China take lessons from the history of environmental problems caused by industrialization in American and the UK (Jing, 2015). Even within these studies of Chinese college students, there have been trends of high environmental awareness and concern. However, Chinese college students represent an elite, educated section of China’s population. By introducing
environmental education at the primary level, as discussed in Jinliang’s study of students in Kunming, the influence of income on environmental concern may continue to decrease. Generally, as income levels continue to rise and environmental education becomes more common, it is likely that concern over environmental issues will become more widespread.

Despite high levels of environmental awareness among students in these studies, studies also consistently reported low participation in environmental organizations and activism. In Wong’s study, only 1.7% of students reported actively participating in an environmental organization, though 81.4% stated that they do not participate but might be interested in participating (Wong, 2003). Similarly, students in Hong’s 2011 study indicated very environmentally friendly attitudes, but comparatively low incidences of past environmental behaviors. This study used participation in environmental activism as a specific measure of environmental behavior. Despite the high level of environmental concern demonstrated in their statements on air quality, respondents had a very low participation rate in environmental activism. Of those respondents who reported their participation, only 2 of 13 stated that they did actively participate in what they identified as environmental activism. In terms of future participation only 18.75% students who reported their likelihood of participation stated that they were likely to participate. In comparison, 43.75% stated that they might possibly participate and 37.5% stated that they were unlikely to participate.

As by the data above, this survey like previous studies, demonstrates a separation between environmental attitudes and environmental action. Students appear to be more willing to verbally express concern or support for environmental issues than they are to individually take action. This survey attempted to address the causes of this separation between action and attitude by evaluating the qualities that students commonly associated with one measure of
environmental behavior: participation in environmental activism. Respondents were asked to define environmental activism, including what actions they considered to be environmental activism. In their definitions respondents who participated in environmental activism equated environmental action to raising environmental awareness and engaging in environmental protection. Respondents who did not participate in environmental activism cited these two concepts as well as several concerns with environmental activism. Returning to Figure 3, a significant portion of statements by these respondents addressed objections to environmental activism and specific obstacles to participating in environmental movements. Some respondents felt that environmental activism is ultimately ineffective, that environmental activists are focused on “blaming” others and that activism “cannot solve the problem in root.” Respondents also cited general problems with activism in China, stating that while activism might be a good course of action in other nations it “would not work” in China. Respondents did not state why they felt that activism was not a valid solution to China’s environmental issues. One possible answer to the perceived ineffectiveness of activism may be respondents lack of information about activism opportunities. Of all statements regarding obstacles to participation in environmental activism, 87.5% stated that there were no opportunities available to participate in activism. If respondents view activism as a marginalized activity with few opportunities and little participation, then they may choose not to participate in spite of having high levels of concern for environmental problems.

Who students believe should be responsible for improving environmental conditions may also impact their individual participation in environmental activism or other environmental behaviors. Wong’s 1998 study of students in Beijing stated that only 5.7% of students felt that the general public should be responsible for cleaning up the environment (Wong, 2003). In 2014,
Kong’s study of Shanghai students reported that 19% of students felt that the general public was responsible for environmental protection (Kong, 2014). This study found that students largely attributed responsibility for causing poor air quality evenly among the government, humanity, and industry. Humanity as it was used in this analysis is equivalent to the usage of “general public” by Wong and Kong. When asked who should be responsible for improving air quality, 52.84% of students felt that the government should hold the main responsibility, followed by 35.29% of students who felt that humanity should hold responsibility, then 11.76% of students who felt that industries should be held responsible. 35.29% is a significant increase over the 19% of students in Kong’s study who placed responsibility for environmental protection on the general public. Interestingly, students in this survey who felt that humanity should shoulder the burden of improving air quality also had the highest number of statements promoting economic and industry actions as solutions to air pollution. These students also had the second highest number of statements promoting regulatory and legal solutions. It appears from this survey that while more and more college students view humanity as responsible for improving environmental conditions, the solutions that these students favor do not lend themselves to individual or collective actions. This may due in part to students holding perspectives that their individual actions are not effective in creating real improvements in air quality. As a result, students view institutional changes and government action as the most effective manner of addressing environmental issues. Further research is needed to more accurately examine how opinions on responsibility relate to participation in environmental activism and other pro-environmental behaviors. Given the information at hand, the trends of participation and views of responsibility indicate that student participation in environmental activism will remain low into
the near future, with the possibility of continued, steady increases in pro-environmental behaviors.
Chapter Six

The Future of Air Pollution: Will Environmental Activism be the Solution?

Breathing is an involuntary response mechanism of the human body. When I traveled abroad to Beijing in February of 2014, my first impression of the city was the acidic, industrial smell of intense smog. I had left my pollution mask in my luggage and I remember obstinately trying to hold my breath as we left the airport. Needless to say, I wasn’t able to keep that up for long. The human body will force you to breathe, regardless of the condition of the air that you inhale. Air pollution in China is impacting the health of millions of people, none of whom can afford to hold their breath and wait for conditions to improve. It is an urgent and unavoidable problem with major effects on public health and economy development. Given the impacts of pollution, widespread engagement in environmental activism initially seems to be a likely response of the Chinese people. However, the responses of Chinese college students to this survey have led me to predict that collective action movements like environmental activism will not be among the methods that Chinese people choose to address air pollution.

As demonstrated in previous studies, Chinese college students possess a high level of environmental awareness and consider air pollution to be among China’s most urgent environmental problems. While they lack scientific knowledge to support this opinion, students report engaging in environmentally friendly behaviors and willingness to support efforts to address environmental problems (Wong, 2003; Kong, 2014). This study supported this trend with evidence that Chinese college students in Jiangsu hold very negative views of air quality and are concerned about the impact of pollution on their daily lives. However, throughout this study and previous work in this field, few Chinese college students report engaging in collective
action or participating in environmental organizations that are actively addressing problems of air pollution. Though they state that they are concerned with current environmental conditions and committed to environmental protection, their actions do not support these claims. There are several possible explanations. Returning to the discussion of Kong’s 2014 study of Shanghai university students, Kong proposes that high environmental awareness could be a “learned response” resulting from environmental education in public schools and media portrayal of environmental problems (Kong, 2014). It is possible that students are repeating opinions taught to them and that their low participation in environmental activism is because they are not as concerned with environmental conditions as these studies lead us to believe. However, I feel that a more likely explanation lies in the social and political climate surrounding environmental activism and collective action in China. As discussed in chapter 2, the Chinese government has adopted a very restrictive approach to NGOs and other grassroots organizations. Collective action in China is considered a threatening and destabilizing social force. As such, the activist methods employed by the environmental organizations are deliberately non-confrontational and aimed at maintaining a long-term dialogue with the central authorities. Activists do this by staging themselves as morally conscious citizens and messengers to the central government. Recalling Liehr’s analysis of Xu Gang’s “Woodcutter Wake Up!”, Gang is not critical of the central government and assumes in his writing that the authorities are unaware of the degradation caused by logging operations in protected forests. By presenting himself as a well-intended citizen delivering information to the central government, Gang is relying on the belief that the central authorities will not shoot the messenger. Taking into consideration this somewhat perilous situation that environmental activists place themselves in, it is not surprising that environmental activism does not hold much appeal for Chinese college students. The non-
confrontational methods that activists employ may protect them from backlash from the central government, but are not designed to create immediate change. The nature of this long-term dialogue is that solutions and improvements come slowly, which may support college students’ views that activism is ineffective in China. This too contributes to the low level of participation in activism by college students, despite their high environmental awareness.

Environmental activism is largely based on the belief that people are obligated to protect public goods like the environment for the benefit of the community. Activism arises from the perspective that the general public is responsible for improving environmental conditions. However, a majority of Chinese college students do not appear to hold this perspective. Of 350 university students surveyed in Beijing in 1998, only 5.7% of students felt that the general public should have some responsibility for improving the environment (Wong, 2003). In 2014, 19% of 753 students surveyed in Shanghai reported that the general public held some responsibility. This study of 44 students found that 35.3% of students felt that the general public held responsibility. Despite this increasing trend of students who feel that the general public is responsible for improving the environment, participation in environmental activism has remained low. The solutions to environmental problems favored by students are not based on individual or collective actions. Instead, students appear to believe that the most effective methods of improving environmental conditions involve government action in the form of better regulations and legal action against illegal polluters. Students may consider collective action movements, like environmental activism, to be ineffective. This study found evidence to support this view, with students stating that activism “would not work in China” and “does not solve the problem at its roots.” Over time, the increasing trend in public responsibility may lead more students to engage in some form of pro-environment behavior, either individually or within their
community. Yet as long as these views of activism as ineffective persist, it is unlikely that students will use environmental activism as the primary method of addressing environmental problems.

Moving forward, I do not believe that environmental activism will become the tool of choice for Chinese college students who wish to improve air quality conditions. Instead, I believe that students will continue to exhibit environmentally friendly behaviors and high levels of concern towards environmental issues. As students graduate from university and begin their careers, their beliefs and behaviors may manifest as pro-environment policies, stricter government regulation of pollution, or green business practices. Activism, barring unforeseen changes in how the central government views collective action and grassroots organizations, will retain the qualities that make it an unpopular option for current students; a tenuous relationship with the authorities and a reputation as ineffective. Even if activism became an effective method of creating positive environmental change in China, it cannot be a panacea for environmental problems. The complexity of air pollution will ensure that poor air quality persists into the foreseeable future, lessened somewhat by the commitment of the central government towards reducing emissions of key pollutants. Environmental conditions may improve over time as this elite generation of Chinese college students ages into positions where they may effect decisions made on environmental issues. Ultimately, of the possible solutions to air pollution one thing is certain; don’t hold your breath waiting for environmental activism to solve it.
Appendix

Survey Instrument

Title: Perspectives on Air Quality and Resulting Behavior in Chinese College Students

Section 1 - General Demographic Information:

1. How old are you?
2. Gender:
   a. Male
   b. Female
3. What is the name of your hometown? What province is it located in?
4. Monthly Family Income in RMB:
   a. 0-3000RMB
   b. 3000-7000RMB
   c. 7000-10000RMB
   d. 10000-20000RMB
   e. Over 20000RMB
5. Race/ Ethnic Group:
   a. Han
   b. Non-Han (Please specify)
6. Parent 1’s Occupation:
7. Parent 2’s Occupation:
8. Desired career after graduation (ex. Teacher, Doctor, Lawyer):

Section 2 - Educational Background:

9. What university are you currently attending? What city and province is it located in?
10. What year do you expect to graduate?
11. What type of degree will you receive upon graduating? (Ex. Bachelors, Masters, PhD.)
12. What is your major or primary subject of study?

Section 3- Perspectives of Air Quality:

13. How would you describe air quality in your hometown?
14. How would you describe air quality at your university?
15. Has air quality effected your daily life or health? If so, how specifically?
16. In your opinion who is primarily responsible for the current air quality? Why do you feel that way?
17. Having studied abroad in the United States, did your opinion of air quality change upon returning to China? If so, please describe how it changed.

Section 4- Reactions to Air Quality:

18. How often do you check apps or news to see the Air Quality Index (AQI) rating?
   a. Never
   b. Once a week or less
   c. Multiple times a week
   d. Daily
   e. Multiple times a day

19. Do you avoid outdoor activities because of the AQI rating?
   a. Yes
   b. No

20. Do you wear an anti-pollution mask when air quality is very poor?
   a. Yes
   b. No

21. Do you own an air filter? How often do you use it?
   a. I don’t own an air filter
   b. Once a week or less
   c. Multiple times a week
   d. Daily
   e. Multiple times a day

Section 5- Participation in Environmental Activism:

22. According to you, what does the term “Environmental Activism” mean?
23. Do you consider community service, volunteering, civic activities, environmental education, etc. to be “environmental activism”? Why or why not?
24. Do you consider protest and petition to be "environmental activism"? Why or why not?
25. Do you participate in environmental activism? If so, please describe your participation.
26. If you do not participate in environmental activism, please describe why.
27. How likely would you be to participate in environmental activism in the future? Why or why not?
28. Do you participate in any activities to improve air quality that you have not already discussed?
29. Do you support any environmental groups, clubs, or non-profit organizations or non-governmental organizations that seek to improve air quality? If so, please describe the group and how you support it.

Section 6- Methods of Improving Air Quality:

30. What do you believe is “satisfactory” air quality? Is this different from the current air quality where you live?
31. How long do you think it will take to improve air quality to a “satisfactory” level?
32. In your opinion, who should be responsible for improving air quality? Why?
33. What actions do you think individuals should take to improve air quality? Why?
34. What actions do you think the government should take to improve air quality? Why?
35. What actions do you think industries should take to improve air quality? Why?

Any Questions? Is there anything else that you would like to add that you have not had a chance to discuss in previous questions? If so, please add your thoughts below.
Bibliography


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