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Examining Trends in Adolescent Environmental Attitudes, Beliefs, and Behaviors Across Three Decades

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Abstract

Since the Environmental Movement began, adolescents' views have been largely ignored in studies of public opinion. The article presents a descriptive analysis of trends in the environmental attitudes, beliefs, and behaviors of high school seniors from 1976 to 2005 using data from the Monitoring the Future study. Across a range of indicators, environmental concerns of adolescents show increases during the early 1990s and declines across the remainder of the three decades. Declining trends in reports of personal responsibility for the environment, conservation behaviors, and the belief that resources are scarce are particularly noteworthy. Across all years, findings reveal that youth tended to assign responsibility for the environment to the government and consumers rather than accepting personal responsibility. Recent declines in environmental concerns for this nationally representative sample of youth signal the need for a renewed focus on young people's views and call for better environmental education and governmental leadership.

Keywords

environmental attitudes; environmental behaviors; trends; adolescence; Monitoring the Future; public opinion

Since April 22, 1970, the first annual Earth Day in the United States, young people have been growing up in a world where certain proenvironmental behaviors, like recycling, have become normative. For decades, the popular perception has been one of young people taking the lead on growing commitments to making the world cleaner and greener. Though examples of environmental activism by youth abound both globally and within the United States (Flanagan, Syvertsen, & Wray-Lake, 2007; Sirianni, 2006), there have been no studies that document trends in environmental concerns of youth at a national level. Moreover, the severity of the problem of climate change (Intergovernmental Panel on Climate Change [IPCC], 2007) and the United States' unmatched resource consumption rate per capita (Venetoulis, Chazan, & Gaudet, 2004) casts doubt on the environmental consciousness of U.S. citizens, young and old

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alike. As they age, today's young people will inevitably become national and global leaders with responsibility for environmental stewardship and sustainability. Indeed, generational replacement is an irrefutable reason to encourage young people's engagement in civic matters such as environmental issues (Delli Carpini, 2006; Ryder, 1965).

The lack of empirical information about young people's changing environmental views calls for an examination of trends in environmental concerns of adolescents across time. We seek to address this need through analyses of time trends in environmental attitudes, beliefs, and behaviors from the Monitoring the Future (MTF) study, an annual survey of nationally representative samples of U.S. high school seniors across three decades (1976–2005). Before turning to our findings, we review theoretical and empirical work that demonstrates the importance of examining the environmental concerns of young people and documents previous trends in public opinions about the environment.

Why Young People?

Despite the near absence of previous research on change in U.S. adolescents' opinions about environmental issues, two key reasons call for paying close attention to trends in this age group's views. First, the theory of generational replacement argues that changes in adolescents' attitudes are important markers of long-term social change. Second, young people's environmental concerns also deserve attention due to the many examples showcasing youth as active agents in protecting the environment.

Generational Replacement

Themes from generational replacement theory (Delli Carpini, 2006; Ryder, 1965) make clear that the environmental views of young people have high social relevance. Trends in young people's opinions can serve as a barometer of social change. Adolescence is an impressionable period when individuals are most open to social forces and socialization influences and when their values and worldviews undergo significant formation (see Alwin & McCammon, 2003). Identities formed in adolescence are likely to inform values, attitudes, and behaviors throughout life (Alwin & McCammon, 2003; Flanagan, 2004; Jennings, 1989; Smith, 1999). Thus, trends in high school seniors' views, which we present, are key indicators of historical shifts in U.S. environmental opinion over the past three decades. U.S. young people's views also offer a glimpse into the likely nature of future environmental policies, as members of younger generations will inevitably become national and global leaders with responsibility for environmental stewardship and sustainability.

Evidence of Youth Environmental Concerns and Action

The few available surveys of youth environmental views reinforce popular opinion that improving environmental conditions is a top concern for young people. A national study of youth public opinion in 1992 revealed that the environment was a top priority for the majority of the 880 11- to 18-year-olds who were surveyed, and 60% reported that they felt previous generations had left them worse-off environmentally (Koenenn, 1992). Results from a 2004 national Gallup Poll indicated that young adults in the United States (ages 18 to 29) were more pessimistic about the quality of the environment compared to older age groups (Public Agenda, 2005), and this pessimism likely reflects greater concern for environmental quality. In a 2007 national poll of high school students' climate change views, the majority of these U.S. youth supported government action to reduce greenhouse gas emissions. However, this study also revealed that youth had limited knowledge of climate change and only 28% of youth felt that climate change would affect them personally in the future (Hamilton College National Youth Polls, 2007). These studies of youth opinion are cross-sectional and limited in their scope; in

the present article, we offer a more comprehensive portrait of adolescents' environmental concerns as they have evolved across time.

Hundreds of youth-oriented environmental organizations exist in the United States and globally, many of which were initiated by youth (Bergman & Baxter, 1997; Flanagan et al., 2007; Sirianni, 2006). Environmental activism typically entails political or community-based actions intended to improve global, national, or local environmental quality (Lubell, 2002; McFarlane & Hunt, 2006). Instances of young people's effective environmental efforts suggest that at least some youth take environmental issues seriously and these concerns lead to action. An individual's personal actions have great potential for preserving environmental resources, especially if enacted on a collective level (Winter & Koger, 2004).

Despite this image of growing environmental concerns among adolescents, little is known about historical shifts in young people's environmental attitudes, beliefs, or behaviors. Moreover, some critics have argued that young people lack environmental consciousness, such as Louv (2005), who noted a widespread "nature-deficit disorder" in young people, and Shellenberger and Nordhaus (2004), whose contested thesis has more broadly proclaimed the "death of environmentalism" (but see also Dunlap, 2006). Previous studies of youth environmental opinion have surveyed youth at only one occasion, and although national in scope, it is unclear how well they represent diverse youth. Furthermore, examples of activism involve only a small fraction of adolescents and may give a misleading image of the views of the broader population of youth. Thus, it is unclear from existing work whether young people's environmental concerns reflect the views and commitments of only a few or of the mainstream. Our findings address this question by examining trends in environmental attitudes, beliefs, and behaviors for nationally representative samples of adolescents across three decades.

Trends in Adult Environmental Opinion

Public opinion is arguably the foundation of the environmental movement, as environmental leaders tend to rely on a broader public for ideological support and resources (e.g., volunteers, contributions) to promote conservation (Barkan, 2004; Dunlap, 1992). Past trends in adult environmental opinions illustrate the history of U.S. environmental conservation, providing a useful context for considering the trends for youth.

We review trends in U.S. adult public opinion since the 1970s to parallel the youth data available to us (for a more extensive review, see Brechin & Freeman, 2004). Combined evidence from national samples of adults from the General Social Survey (GSS), Roper surveys, and Gallup polls suggests that proenvironmental attitudes reached their height in the early 1970s, shortly after the energy crisis of 1973, and then declined by the end of that decade (Dunlap, 1992, 2002). Through the 1980s, adults' proenvironmental attitudes increased steadily, and membership in environmental organizations also surged (Mitchell, Mertig, & Dunlap, 1992). Public support for environmental concerns was at an all-time high in 1990, 20 years after the first Earth Day, and then waned in the mid-1990s (Dunlap, 2002; Mertig, Dunlap, & Morrison, 2002). Despite these shifts, adults have consistently favored environmental issues across the past three decades, making this an enduring concern of the U.S. polity (Dunlap, 2002). However, the environment is often a lower priority than other political issues (Brechin & Freeman, 2004; Dunlap, 2006) and has not seemed to figure prominently into voting decisions (Guber, 2001).

Potential explanations for trends—Scholars and commentators have posited a range of explanations to account for changes in adults' environmental opinions over time, including high-profile events, governmental leadership, and American's values and worldviews. First, high-profile environmental events have been associated with increases in environmental concerns; prominent examples include the energy crisis of 1973 (Dryzek, Hunold, Schlosberg,

Downes, & Hernes, 2002), the 1989 Exxon-Valdez oil spill (Shabecoff, 2000), and the 20th anniversary of Earth Day in 1990 (Mertig et al., 2002). On the other hand, during times when the nation's priorities shift to other events and issues, such as terrorist attacks, war, or the economy, environmental concerns may take a backseat (Brechin & Freeman, 2004; Dunlap, 2002, 2006). Second, scholars have linked the environmental policies of presidential administrations to public opinion on the environment. Some argue that increases in environmental concerns correspond to disappointment in an administration's response to environmental issues, such as in the 1980s with Reagan (Dunlap & Mertig, 1992; Mitchell et al., 1992). Declining environmental concerns in the late 1970s has been attributed to substantial progress in environmental policies (Dunlap & Mertig, 1992), yet in the opposite vein, declines in environmental concerns in the mid-1990s have been attributed to environmental rollbacks that came with Republicans' control of Congress in 1994 (Mertig et al., 2002). Disparate findings about the public's responses to governmental leadership on the environment fail to clarify the role of the government in relation to public opinion on the environment. Third, the nation's predominant values and worldviews have been used to explain environmental attitudes and behaviors. A host of disciplines (e.g., economics, sociology, psychology, political science) recognize a trade-off between the values of environmental protection versus consumption (e.g., Dunlap, Van Liere, Mertig, & Emmet Jones, 2000; Inglehart, 1997; Schwartz, 1994), suggesting that rises in materialism may be to blame for declines in environmental concerns. Furthermore, a worldview that espouses technological efficiency, also called the *technofix*, has been linked to lower engagement in environmental conservation behaviors (Kilbourne, Beckman, Lewis, & Van Dam, 2001), and support for this view may explain changes in environmental concerns over time. Such belief in technology espouses the view that all future problems can and will be solved by technology, and adults who hold this faith in technology tend to also believe that no individual action is necessary.

The Present Study

As the critical first step toward understanding change in youth's environmental attitudes, beliefs, and behaviors, we offer a descriptive portrayal of trends across several decades. Though many commentators and social critics make claims about changes in the attitudes and behaviors of youth, their conclusions are rarely tested due to the absence of comparable data across time for reasonably representative samples. Fortunately, since 1976, the MTF study has gathered annual data on a wide range of topics, including environmental issues, from nationally representative samples of high school seniors in the United States. We aim to advance the sparse literature on adolescents' environmental opinions by presenting time trends for all measures of youth environmental concerns in this dataset.

Indeed, we examine a diverse set of measures, including conservation behaviors; attitudes toward consumer, government, and personal responsibility for the environment; attitudes toward pollution; and belief in resource scarcity (see Table 1 for item list). Many of the MTF measures do not map directly onto environmental questions asked in previous studies. For example, surveys like Gallup and GSS typically ask individuals to rank the environment in relation to other national issues, to rate environmental quality as getting better or worse, and to give opinions on government's spending on conservation (Brechin & Freeman, 2004;Dunlap, 2002). Yet the measures we examine offer a rich source for adolescents' views that span a wide range of environmental issues. The trends we present will show shifts[1] in environmental concerns and point to periods when historical events may have been especially influential.

[1]Because a single age group is surveyed each year, we have no basis for distinguishing between cohort and period effects.

Our work is primarily descriptive, and we do not endeavor to pinpoint causes for the shifts in youth's environmental concerns. As exploratory first steps toward explanation, however, we examine associations between the various trends in environmental concerns to describe which trends have tended to change in parallel, and we also examine associations between environmental trends and trends in youth's materialistic values and belief in technology.

Method

We used data from MTF, a national survey of high school seniors conducted annually since 1976 (Johnston, Bachman, & O'Malley, 2006; see also www.monitoringthefuture.org). Each year a random sample of high school seniors responds to the survey, making it possible to determine how the attitudes, beliefs, and behaviors of youth are changing over time. Six different forms of the survey, each with somewhat different content, are administered each year, and approximately 3,000 seniors respond to each form. The sample is selected using a multistage random sampling from public and private high schools across the nation. The datasets contain sample weights that we used to ensure that results are representative of American high school seniors.

We drew upon trend data from 1976 to 2005. Our sample size of nearly 100,000 provided sufficient statistical power for detecting even weak relationships. Time trends for all items we considered readily reached statistical significance in ordinal logistic models treating year as a categorical variable and controlling for respondents' sex, race, parental education, and educational aspirations ($\chi^2 > 500$, $df = 29$, $p < .001$). In the results that follow, we present standard deviations to describe the magnitude of change over time for each trend.

Measures

A summary of measures, including item wording and response options, appears in Table 1. To give all measures numerically comparable ranges for presentation of time trends in figures, items on a 4-point scale were recoded to be compatible with a 5-point scale as follows: 1 = 1, 2 = 2.33, 3 = 3.67, and 4 = 5. When multiple items were available to measure the same construct, we combined them to form scales. Several scales included items from different questionnaire forms, which were answered by different respondents. Though individual scores, therefore, did not exist for these scales, we could still compute the annual scale means that comprised their time trends by taking the average of each year's item means. We combined items into scales only when they had similar conceptual meanings and had similar patterns of change across the 30-year period, as reflected in correlations between annual means, across years, of .7 or higher. Annual scale means were formed by averaging the annual means across the set of items.[2]

Environmental conservation behaviors—Our first measure concerned respondents' actions to reduce energy use, such as using less heat and driving less. These were the only measures of environmental behaviors available; one item is a behavioral intention and the items span a narrow range of potential proenvironmental behaviors. These four items showed very similar time trends, as can be seen in Figure 1, with an average correlation of .81 among their annual means across years. The same respondents answered the first three items (see Table 1), and their Cronbach's alpha reliability averaged .58 across years (range = .50 to .62).

Environmental responsibility—MTF included measures of the degree to which consumers, the government, and the respondent are responsible for solving environmental

[2]For scales with items asked of different individuals, interitem correlations and reliability coefficients such as Cronbach's alpha could not be calculated. We present alpha for entire scales when possible and for the portions of the scale answered by the same respondents otherwise.

problems. Single items reflected the degree to which youth believe they themselves are responsible and believe that people should change buying habits to protect the environment (consumer responsibility). Three items measured attitudes toward government responsibility for addressing environmental problems, and they showed similar patterns of change across 30 years (r's ≥ .82 for annual means across years), supporting the formation of a single scale. The first two items (see Table 1) were asked of the same individuals and had an average within-person correlation of .30 (*range* = .21 to .59 across years).

Attitudes toward pollution—Three items measured attitudes toward pollution, reflecting themes of growth in pollution, the seriousness of dangers due to pollution, and the importance of pollution relative to growth. Two of these items were reverse coded so that higher scores would indicate more concern about increasing pollution (see Table 1). Though these items showed similar trends over time (average r = .76 for annual means across years), they were only weakly associated at an individual level (average annual within-person r = .09, average annual α = .24). We, therefore, examined these items separately rather than combining them into a scale.

Resource scarcity—A single item concerning resource scarcity reflected young people's belief about whether Americans will have to live with shortages in the future (see Table 1).

Materialism and belief in technology—The materialism scale measured desire for a higher standard of living and consisted of three items with parallel trends (all r's ≥ .83 for annual means across years). The latter two items (see Table 1) came from the same questionnaire and had an average annual within-person correlation of .47 (*range* = .41 to .51 across years). Belief in technology was measured by a single item reflecting faith that technology would solve problems that arise in society (see Table 1).

Results

Trends in Conservation Behaviors

We found a precipitous decline in high school seniors' reports of conservation behaviors across the three decades of 1976–2005 (see Figure 1). Though the trends showed some recovery in the early 1990s, the general trend was downward. Adolescents' conservation behaviors showed unparalleled levels in the mid-to-late 1970s. Declines in the 1980s were steep, though reports of cutting down on electricity and reducing heat were even lower through the 1990s and early 21st century. The magnitude of change for these trends was quite large: In examining the conservation behavior scale (the average of the four items), change from the highest mean level in 1980 (M = 3.56) to the lowest level in 1999 (M = 2.68) reflected a shift that was 3.5 standard deviations in size (SD across years = .25). These trends clearly indicate that youth in the past two decades were not as willing to endorse conservation behaviors of cutting down on heat, electricity, driving, and using bike or mass transit as were young people in the late 1970s.

Attitudes Toward Environmental Responsibility

Trends in youth's attitudes toward government, personal, and consumer responsibility showed more complex fluctuation over time than did trends in conservation behaviors. As Figure 2 illustrates, high school seniors across 30 years were more likely to endorse consumer responsibility and the government's responsibility to protect the environment than they were to report a *personal* effort to conserve environmental resources. Trends in these three attitudes showed modest declines through the 1980s and more pronounced declines through the mid-to-late 1990s, with some increase between the late 1980s and 1992. In the early 1990s, youth's endorsement of consumer responsibility for protecting the environment peaked and surpassed levels of endorsement of government and personal responsibility for the rest of the study period.

Though the absolute change in these trends was somewhat smaller than that of conservation behaviors, the maximum change for each of these trends was nearly 3 standard deviations in size.

The trend in personal responsibility followed a similar pattern to the trend in endorsement of government responsibility ($r = .70$, $p < .001$ for annual means, across years), yet was not congruent with the trend in holding consumers accountable ($r = .007$, *n.s.* for annual means across years; see Figure 2). The positive association between trends of personal and government responsibility was noteworthy, suggesting that at times when youth attributed more responsibility to the government for solving environmental problems, they were also more likely to endorse a personal effort to protect the environment.

Trends in Attitudes Toward Pollution

Young people's opinions that pollution has increased, is dangerous, and should take priority over growth peaked in the late 1980s and early 1990s, while showing stability or slight decline through the late 1970s, early 1980s, and since 1992 (see Figure 3). These differences were not especially large: The magnitude of change was smaller than for trends in conservation behavior and attitudes toward responsibility, with the difference between the highest and lowest annual means for each pollution trend representing half a point or less on the 5-point scale. Youth's attitudes toward pollution started and ended at the same level at the beginning and end of the three decades, showing relative stability with the most fluctuation during the early 1990s. All three trends showed a similar pattern of change over time (average $r = .75$ for annual means across years), though as noted above, these items were not highly correlated within individuals.

Belief in Resource Scarcity

The trend in youth's belief that resources are scarce showed a steep downward shift through the 1980s, with a slight increase in 1990, followed by a decrease from 1992 to 1995 and relative stability for the past 10 years of the study period (see Figure 4). This pattern was strikingly similar to the trend in conservation behaviors, also pictured in Figure 4 (as the mean of the item-level trends appearing in Figure 1). The magnitude of change for this trend was large and comparable to the conservation behavior trend. Differences in the highest ($M = 4.20$ in 1980) and lowest ($M = 3.27$ in 2004) means represented a change of 3.1 standard deviations (*SD* across years = .30). Furthermore, 81% of youth indicated that they mostly agreed or agreed with the resource scarcity item in 1980 compared to only 46% of youth in 2004, suggesting a significant shift in thinking about resource scarcity across these decades.

Associations Among Trends

Correlations among youth's conservation behaviors, environmental attitudes and beliefs, value of materialism, and belief in technology are shown in Table 2. Rather than discuss each statistically significant correlation, we summarize several key conclusions that are apparent from viewing the correlation matrix as a whole.

Similar patterns for personal responsibility and conservation—First, youth's endorsement of their personal responsibility for the environment and their reports of conservation behaviors followed highly similar patterns of change over 30 years ($r = .93$, $p < .001$), and were related to the same set of attitudes, beliefs, and values. Trends in youth's personal responsibility and conservation behaviors were associated with trends in endorsement of government responsibility for the environment (r's = .70 and .46, respectively), belief that resources are scarce (r's = .90 and .95), materialist values (r's = −.72 and −.83), and belief in technology (r's = .72 and .82). The strongest associations were found between personal responsibility, conservation behaviors, and belief in resource scarcity (with correlations of .9 or higher), suggesting that at times when youth were less aware that resources are scarce, they

felt less personally responsible for the environment and were also less willing to take action to conserve these resources.

Materialism—As Figure 5 shows, the trend in youth materialism showed a steady decline during the 1980s until 1991 when the trend remained stable around the value of 3.4 on the 5-point scale. At times when youth were most materialistic, they also tended to be low on conservation attitudes and behaviors. Furthermore, at times when adolescents had higher materialist aspirations, they were also less willing to believe in resource scarcity ($r = -.85$, $p < .001$). Thus, in the eyes of young people across several decades, values of consumption have been at odds with conservation.

Belief in technology—Findings concerning belief in technology ran counter to prior research (Kilbourne et al., 2001) that has suggested a negative relationship between belief in technological efficiency and environmental action. In contrast, youth trends revealed that belief in technology was positively associated with personal responsibility and conservation behaviors. That is, at times when youth believed that technology would solve problems that arise, they were also likely to positively endorse a personal responsibility to preserve the environment and a willingness to conserve its resources. Thus, for young people, faith in technology goes hand in hand with personal commitments to the environment.

Attitudes toward pollution and responsibility—Trends in attitudes toward both consumer and government responsibility were significantly associated with all three trends in attitudes toward pollution (see Table 2). In other words, at times when youth expressed views that pollution has increased, is dangerous, and should be given priority over growth, they were also likely to view government and consumers as having greater responsibility for the environment. Compared to the associations among conservation behaviors, personal responsibility, and resource scarcity (average $r = .93$), these associations were substantial (average $r = .66$) but not as strong. Trends in pollution attitudes were not significantly related to the conservation behavior trend, and only the dangers of pollution trend was associated with the trend in personal responsibility, suggesting that youth may see pollution as the responsibility of government and others rather than themselves.

Discussion

Overall, trends in adolescents' environmental concerns showed declines through the 1980s as well as in the 1990s and beyond; increases in concerns were apparent in the early years of the 1990s. Though declines were more dramatic for trends in conservation behaviors and belief in resource scarcity than for trends in environmental attitudes, a similar pattern of change was found across the range of measures. Trends in young people's personal environmental responsibility and conservation behaviors are likely to be explained by the same set of factors; strong candidates for this explanatory role include attitudes toward governmental leadership, belief in resource scarcity, endorsement of materialism, and faith in technology.

Unique Trends for Young People?

Trends in adolescents' environmental views differed from trends in the adult public opinion literature, particularly during the 1980s. Specifically, though several studies have shown an increase in environmental consciousness in adults through the 1980s (Brechin & Freeman, 2004; Dunlap, 2002; Mertig et al., 2002), all of the trends we examined showed declines in environmental concerns during these years. Heightened environmental sentiment in the mid-1970s and in the early 1990s seems to have been a shared phenomenon for youth and adults (Brechin & Freeman, 2004; Dunlap, 2002). Beyond these observations, it is difficult to compare adult and youth trends due to substantial differences in the way environmental

opinions are measured across studies. Future research is needed that examines parallel data for youth and adults and considers the cohort, age, and period effects that may contribute to observed differences between the time trends of the two groups. Possibilities may exist for directly comparing MTF data with data from other studies or examining parallel items for youth and adults in Gallup Polls. Important developmental questions regarding environmental concerns also remain unanswered, such as how environmental concerns change as adolescents become adults.

Mapping Shifts in Trends Onto Historical Events

Conservation behaviors were at an all-time high for youth through the mid-1970s to 1980, and these heightened reports of conservation may correspond to the 1970s energy crisis. Dryzek and colleagues (2002) noted that shortly after the energy crisis of 1973, society's economic and environmental concerns were melded into a common drive for conservation, explaining the elevated environmental concerns in the 1970s. Environmentalism was in harmony with concerns about resource scarcity, as oil was in short supply during this decade. The association between concerns of scarcity and environmentalism is supported more generally by our finding of highly parallel trends for conservation behavior and resource scarcity. Other environmental attitudes in the MTF data did not seem as sensitive to the 1970s energy crisis, and findings suggest that beliefs about resource scarcity may have the largest impact on personal behaviors and responsibility. Given the precedent set by these findings, we might expect that the current climate of rising oil prices in the United States would coincide with a rise in conservation behavior in the next few years of the MTF survey.

Across all of the environmental trends we examined, youth showed a noticeable increase in environmental concerns in the early 1990s—right around the 20th anniversary celebration of Earth Day. Other work has also linked Earth Day 1990 to rises in proenvironmental attitudes (e.g., Mertig et al., 2002). The celebration, which was a week long in some cities, galvanized residents of many communities; garnered the attention of celebrities, nonprofit organizations, and corporations; and was heavily covered by the media (e.g., Barker & Harriston, 1990; Keen & Hoversten, 1990). Unfortunately, no Earth Day since 1990 has incited as much enthusiasm and environmental action, and media attention to Earth Day 1990 has also been unrivaled in subsequent Earth Day celebrations. This potential "Earth Day 1990" effect on youth's environmental concerns suggests an important role for media, schools, and communities in communicating enthusiasm and awareness about environmental action to young people. Our findings that increases in environmental concerns were associated with the 1970s energy crisis and 1990 Earth Day celebration are quite consistent with previous literature, but our simple correlational analyses provide no direct test of these potential explanations.

The Role of Governmental Leadership for Youth

Not only did youth across 30 years consistently believe that the government was more responsible for the environment than they were personally, but also similar patterns in trends for attitudes toward governmental responsibility, personal responsibility, and conservation behaviors suggest that youth's attitudes toward governmental responsibility may permeate feelings of personal obligation. At times when youth's endorsement of the government's role in solving environmental problems waned, feelings that they personally must do their part also declined. The flipside of this association offers optimism: When adolescents believe the government should respond to environmental issues, they too may be likely to follow suit with feelings of personal obligation. Like environmental scholars and activists (e.g., Lubell, 2002), youth seem to view conservation as a collective responsibility. Likewise, in the minds of youth, their own actions to preserve the environment seem closely linked to their attitudes toward government's role in environmental conservation. One implication of these findings might be that if government leaders step up to acknowledge the seriousness of environmental

problems and offer genuine solutions of sustainability, perhaps young people will listen and follow their example by taking on greater responsibility.

It is interesting to view trends in youth environmental concerns in relation to the environmental orientations of Presidential administrations across the decades. For example, the steepest decline in youth's conservation behaviors occurred during the Reagan administration, which has been widely criticized for its environmental policies. Yet this pattern does not appear to always hold. George W. Bush is known by some as the least environmental president on record (Brechin & Freeman, 2004), yet youth's environmental attitudes and behaviors remained relatively stable and even showed some increases in the early 21st century. We will be interested to see whether MTF data in the next few years reveal a rise in youth's environmental concerns after 2006 that corresponds with the release of Al Gore's film, *An Inconvenient Truth*, which was watched by millions, or in response to the more environmentally conscious Obama administration. Gore's film is an example of a governmental leader speaking sincerely and knowledgably about climate change, yet it remains to be seen whether his efforts and the ensuing media coverage have positively impacted youth's environmental views. Governmental leadership including policies about mass transit or emissions reductions may be particularly applicable for shaping the collective behavior of youth.

Values and Worldviews

The rise in materialism remains a potential explanation for the declines in youth's environmental conservation. We found a negative correlation among trends for materialism and youth's personal environmental responsibility and conservation behaviors; these negative associations were particularly apparent in the 1980s. Though our study shows stability in materialism for youth since the 1990s, the Pew Research Center (2006) reported that the number of consumer goods considered necessities by youth and adults has risen considerably in the past decade. The drive for a higher standard of living, which includes more consumer goods and inevitably more consumption, is incompatible with an ethic of conserving resources. Indeed, we found that when young people valued materialism, they were also less inclined to believe that resources were scarce. The close association between trends in awareness of scarcity and environmental conservation behaviors, and the declining of both, suggests that increasing awareness of resource scarcity is a plausible point of intervention for young people, perhaps in part because scarcity has implications for one's standard of living.

We also found that a belief that technology will solve future problems was positively associated with trends in youth's personal responsibility and conservation behaviors. Though this finding was inconsistent with previous work with adults (Kilbourne et al., 2001), it seems to fit the ease with which young people assimilate to technological advances. Rather than viewing technological efficiency as something that absolves individuals of responsibility, faith in technology goes hand in hand with personal environmental concerns for youth. An implication of this finding is that perhaps adolescents' faith in technology can be better harnessed to address their personal commitment to improving the environment. Further research is needed to elaborate on the importance of values and worldviews in shaping environmental attitudes and behaviors, as others have argued that environmental views are rooted in cultural worldviews (Ignatow, 2006; Kilbourne et al., 2001; Shellenberger & Nordhaus, 2004).

Limitations

The strengths of this article lie in presenting novel trends for adolescents' environmental concerns using a variety of indicators, 30 years of data, and a nationally representative sample of high school seniors. The current study also raises awareness that youth may not all be as environmentally conscious as public perceptions suggest. Despite these strengths, there are several limitations to the study. First, the conservation behavior items were limited in scope

and youth may be actively engaged in environmental behaviors other than reducing driving and electricity use and using bike or mass transit. Thus, declines in these conservation behaviors cannot be generalized to all proenvironmental actions. Alternative explanations exist for the declines in youth's conservation behaviors: Adolescents' control over decisions to cut down on energy use in the household may have changed over time, or cutting down on energy could have become normative through the 1980s and 1990s, leaving potential for adolescents' interventions in such household conservation behaviors rather low. Given these limitations, the conservation behavior trend should not be the sole basis for understanding youth's environmental consciousness over time. In the context of other environmental trends for youth, conservation behaviors showed a more dramatic pattern, yet one that was consistent with trends in attitudes and beliefs. Moreover, though we had access to attitudes toward governmental, consumer, and personal responsibility, as well as attitudes toward pollution, these items are not commonly used in other studies on adults and limit our ability to make comparisons. Finally, the article was meant to be descriptive. The potential explanations proposed were not tested as causal mechanisms, and there could be other, unmeasured explanations for increases and declines in youth's environmental concerns over time. People do not always act in accordance with their environmental attitudes and values, and thus public opinion is not always an accurate gauge of environmental action (Dunlap, 1989). Future research should attempt to tease out causal mechanisms for changes in environmental concerns.

Conclusion

The MTF data failed to show substantial increases in youth's environmental concerns since the early 1990s. Our analyses of trends in youth attitudes toward environmental responsibility revealed that they tended to see government and people in general as more responsible for environmental problems than they themselves felt. Clearly, the average high school senior across the past three decades has not viewed him or herself as the first line of defense in protecting the environment. However, youth have much to contribute to environmental issues and do not get the attention they deserve from environmental scholars. Elsewhere, youth opinions figure more prominently into the awareness of political parties and governments. For instance, Australian Democrats have annually surveyed youth in their country since 1992 and annually present a summary of youth opinions on issues such as the environment to their Parliament (http://www.natashastottdespoja.com/). Whether youth environmental consciousness is waxing or waning, scholars, community leaders, government officials, and others should be more proactive in understanding who is participating and why (or why not). The urgent need for society to address climate change (IPCC, 2007) coupled with declines in young people's concerns about the environment in general, and limited knowledge and investment in climate change in particular (Hamilton College National Youth Polls, 2007), call for educational and programmatic interventions to promote environmental consciousness in youth. Promising avenues for intervening include youth's beliefs in resource scarcity and technology; our findings suggest that youth's personal responsibility and conservation behaviors may be boosted by connecting them to resource scarcity and technological efficiency. We *must* care about young people's environmental attitudes, beliefs, and behaviors, as they are likely to be carried into adulthood, communicated to offspring, and expressed in leadership decisions as younger generations replace their elders as society's leaders.

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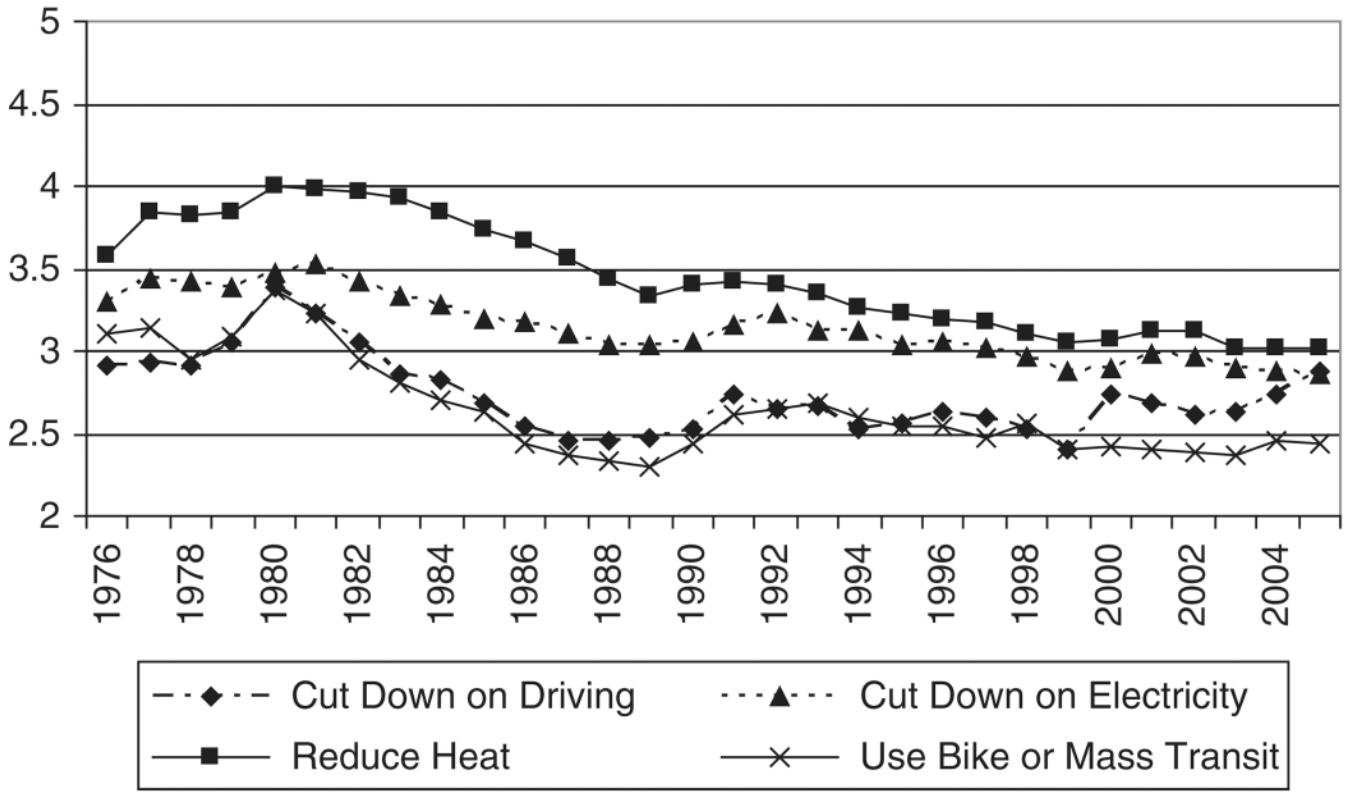

Figure 1.
Trends in Environmental Conservation Behaviors by Item

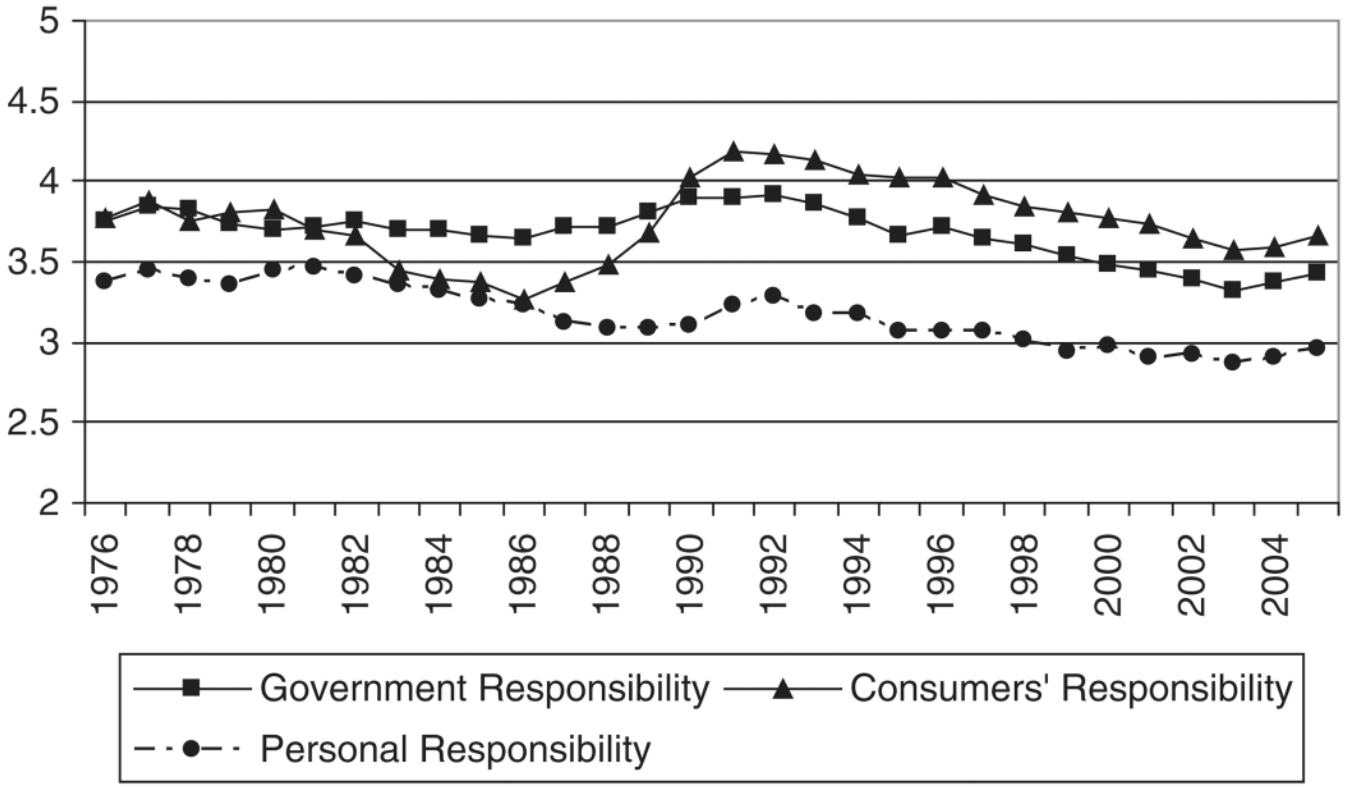

Figure 2.
Trends in Attitudes Toward Government, Personal, and Consumers' Responsibility

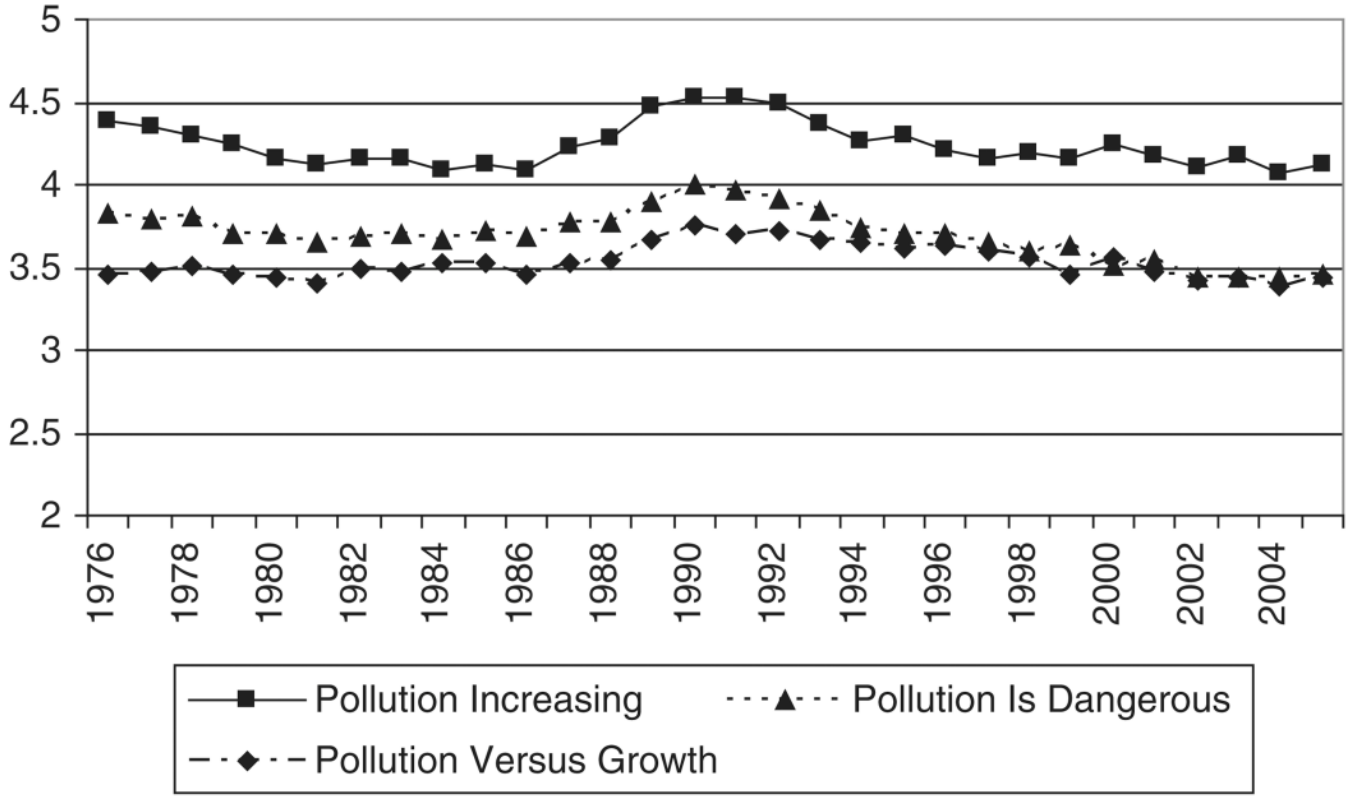

Figure 3.
Trends in Attitudes Toward Increasing Pollution

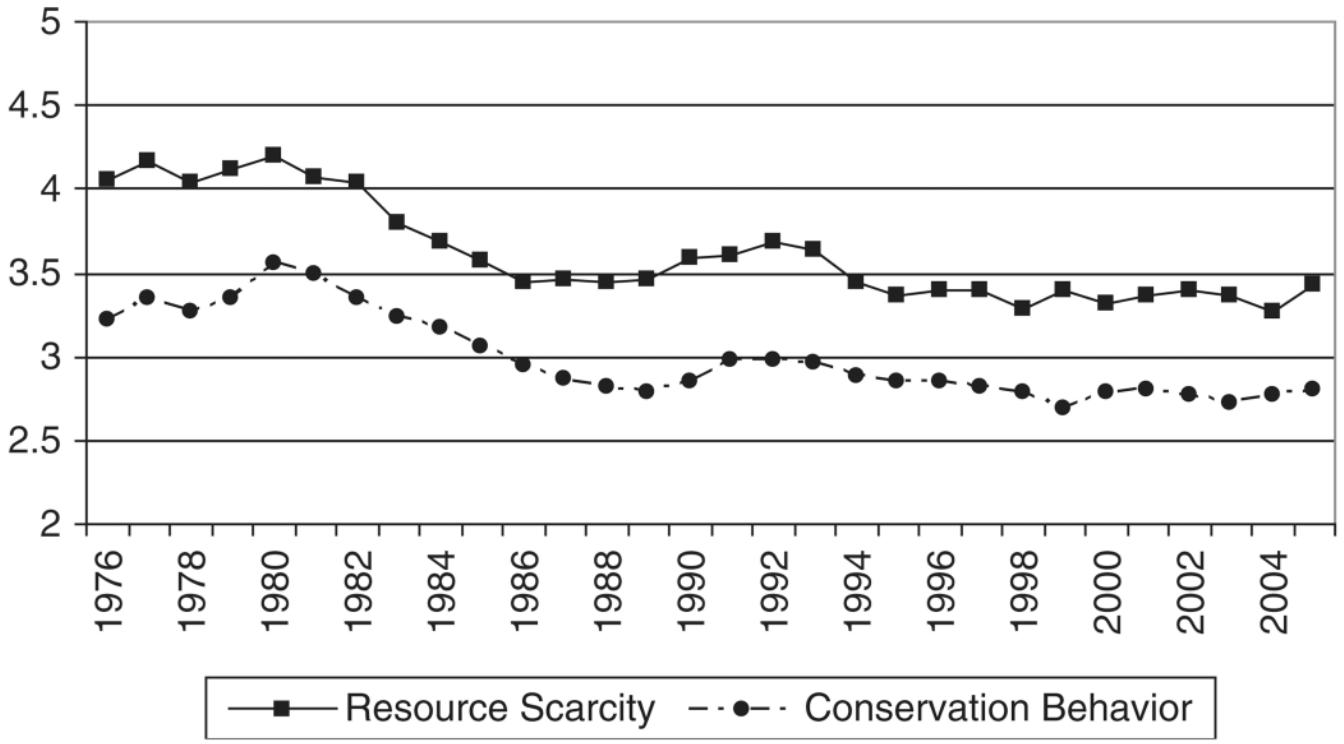

Figure 4.
Trends in Belief in Resource Scarcity and Conservation Behaviors

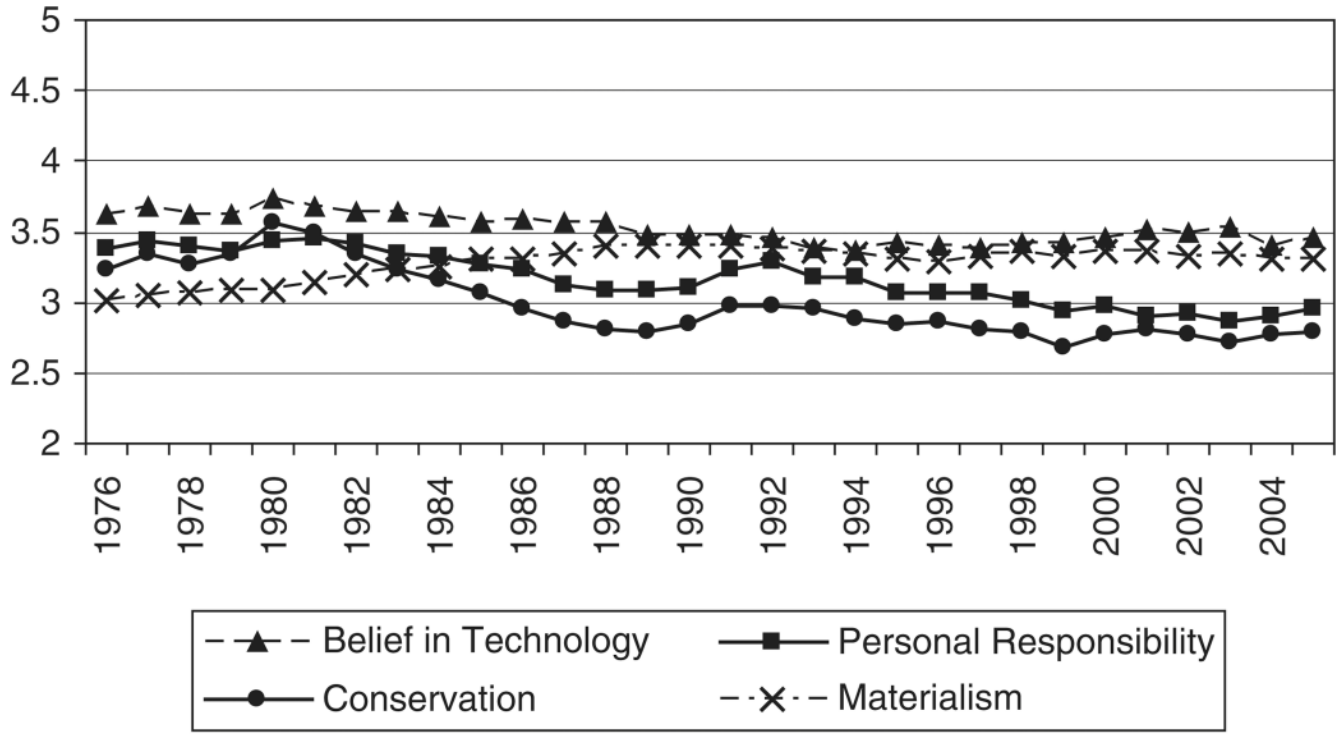

Figure 5.
Trends in Belief in Technology, Materialism, Personal Responsibility, and Conservation Behaviors

Table 1

Youth Environmental Items and Response Options

Construct	Items	Response Range	Mean (*SD*)
Conservation behaviors	In the house or apartment where you live, is an effort made to reduce heat	1 = *Not at all* to	3.45 (0.34)
4 items: r = .81,	in the winter in order to save electricity?	4 = *Yes, quite a bit*;	
M = 2.99, SD = 0.25	Do you make an effort to cut down on driving in order to save gasoline?	1 = *Disagree* to	2.73 (0.24)
	Do you make an effort to cut down on the amount of electricity you use in	5 = *Agree*	3.14 (0.20)
	order to save energy?		
	I would probably be willing to use a bike or mass transit (if available) rather		2.65 (0.30)
	than a car to get to work.		
Personal responsibility	In your own actions—the things you buy and the things you do—how much	1 = *None* to	3.17 (0.19)
1 item	of an effort do you make to conserve energy and protect the	4 = *Quite a bit*	
	environment?		
Consumers' responsibility	People will have to change their buying habits and way of life to correct our	1 = *Disagree* to	3.75 (0.25)
1 item	environmental problems.	5 = *Agree*	
Government responsibility	Government should take action to solve our environmental problems even if		3.93 (0.22)
3 items: r = .87,	it means that some of the products we now use would have to be changed	1 = *Disagree* to	
M = 3.67, SD = 0.16	or banned.	5 = *Agree*	
	Government should place higher taxes on products that cause pollution in		3.50 (0.17)
	their manufacture or disposal, so that companies will be encouraged to		
	find better ways to produce them.		
	Government should take steps to deal with our environmental problems,		3.59 (0.13)
	even if it means most of us pay higher prices or taxes.		
Attitudes toward pollution	In general, pollution has increased in the United States in the past 10 years.	1 = *Disagree* to	4.24 (0.14)
3 items: r = .76	The dangers of pollution are not really as great as government, the media,	5 = *Agree*	3.70 (0.15)
	and environmental groups would like us to believe (reverse coded).		
	America needs growth to survive, and that is going to require some increase		3.53 (0.10)
	in pollution (reverse coded).		
Resource scarcity	There will probably be more shortages in the future, so Americans will have	1 = *Disagree* to	3.62 (0.30)
1 item	to learn to be happy with fewer "things."	5 = *Agree*	
Materialism	When you are older, do you expect to own more possessions than your	1 = *Much less* to	3.67 (0.11)

Construct	Items	Response Range	Mean (*SD*)
3 items: r = .89,	parents do now, about the same, or less?	5 = *Much more than*	
M = 3.28, SD = 0.11	Compared with your parents, what is the smallest amount that you could be	*parents*	2.78 (0.09)
	content or satisfied to own?	1 = *Not important* to	
	Having lots of money (is important to you in your life).	4 = *Extremely*	3.39 (0.16)
		important	
Belief in technology	When things get tough enough, we'll put our minds to it and find a	1 = *Disagree* to	3.52 (0.10)
1 item	technological solution.	5 = *Agree*	

Note: Items were recoded to a 5-point scale. Means and standard deviations come from recoded items. In the left column are shown scale means and average correlations among annual means across years.

Table 2

Correlations Among Trends in Youth's Environmental Attitudes, Beliefs, and Behaviors

	1	2	3	4	5	6	7	8	9	10
1. Conservation behavior	1									
2. Personal responsibility	.93***	1								
3. Consumer responsibility	−.05	.01	1							
4. government responsibility	.46**	.70***	.44*	1						
5. Pollution has increased	−.05	.16	.64***	.70***	1					
6. Pollution has dangers	.28	.54**	.40**	.95***	.80***	1				
7. Pollution over growth	−.29	–.04	.62***	.64***	.76***	.70***	1			
8. Resource scarcity	.95***	.90***	.06	.52**	.13	.38*	−.23	1		
9. Materialism	−.83***	−.72***	.08	−.18	.16	−.03	.52**	−.85***	1	
1. Belief in technology	.82***	.72***	−.48**	.17	−.19	.10	−.52**	.79***	−.74***	1

Note: *N* (years) = 3.

* $p < .05$.

** $p < .01$.

*** $p < .001$.