

THE Generation X Report

A Quarterly Research Report from the Longitudinal Study of American Youth

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Food

Shared, Prepared, Organic, and Genetically Modified

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FOOD IS A CENTRAL PART OF HUMAN LIFE. WE NEED IT TO SURVIVE. We share it with our families and our friends and we often make it a central part of our celebrations. We shop for it, cook it, read about it, talk about it, and sometimes worry about it.

In this report, the third of a continuing series, we look at the ways that young adults in Generation X are involved with food. Using data from our 2010 national survey, this report will look at the level and kinds of involvement that young adults in the Longitudinal Study of American Youth (LSAY) report about their own shopping, cooking, and sharing of food. We will also examine the attitudes of Generation X toward organic foods and genetically modified foods. And we will take a brief look at the places from which young adults obtain information about food-based issues such as genetically-modified foods.

FOOD IN DAILY LIFE

Generation X spends a good deal of time each month shopping for food, cooking it, and sharing it with family and friends. During the winter and spring of 2010-11, Generation X young adults cooked 42 meals a month and went food shopping six times each month (see Table 1). Married women reported cooking substantially more meals and doing slightly more shopping than married men. Unmarried women reported preparing slightly more meals each month than unmarried men, and unmarried men reported eating more meals in good restaurants and fast-food places than unmarried women.

Generation X adults reported that they buy eight fast-food meals each month and that they eat three meals each month in a “good” restaurant. Unmarried men reported a higher rate of fast-food consumption than either married men or women regardless of marital status.

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Compared to previous generations, the young men in the LSAY sample were relatively more involved in food shopping and preparation than their fathers or grandfathers. Married men in Generation X said that they prepared 34 meals in a typical month, compared to the 51 meals prepared by married women. And young married men reported shopping for food five times a month, just two times fewer than married women. Although married women in Generation X bear more responsibility for food shopping and preparation than their spouses, the margin appears to be smaller than similar data from earlier generations.

Many young adults in Generation X report that they engage in a variety of activities to learn more about food. In a typical month, the young adults in the LSAY reported that they watched four television cooking shows, looked for food-related information online three times, and read two

magazine articles about food or cooking (see Table 1). Women were more likely to seek food information than men, but a substantial proportion of men also reported watching cooking shows, seeking food information online, and reading magazine articles about food and cooking.

Preparing and sharing food is a major social activity in most societies. The young adults in Generation X reported that they often talk to their friends about food-related matters, trade recipes by email, and cook for and entertain guests in their home. Food is a frequent subject of conversation among Generation X young adults, reflected in a reported six food-related conversations with friends in a typical month. Although their mothers might have traded recipes across the backyard fence, today's young adults trade recipes by email about once a month or 12 times a year.

In *Bowling Alone* (2000), Robert Putnam looked at a series of national adult surveys and found that the average number of times that American adults reported entertaining other adults at home had dropped from 14 in 1975 to eight in 1998. The pattern of decline was steady throughout these two decades and Putnam concluded that this represented a decline in social capital in the United States. In the 2010 LSAY annual survey, Generation X young adults reported that they

Table 1: Food-related activities, 2010

Number per month	All Gen X	Married		Not married	
		Men	Women	Men	Women
Number of meals cooked	42	34	51	35	42
Shopping trips for food	6	5	7	6	6
Ate a meal in a good restaurant	3	3	3	4	3
Bought a fast-food meal*	8	8	7	11	8
Shopping, cooking, eating out	59	50	68	56	59
Watching food shows on television	4	4	4	4	5
Looked for food information online	3	2	4	2	4
Read magazine story on food	2	1	3	1	2
Looking for food information	9	7	11	8	11
Talked to friends about food or cooking	6	5	6	6	7
Cooked for/entertained guests at home	1	1	2	2	1
Cooked with other adults in group	<1	<1	<1	<1	<1
Sent/received recipes by email	1	<1	2	1	2
Communicating about food	9	7	10	9	11
All food-related activities	77	64	89	73	82
Number of respondents	3,080	1,128	1,104	408	440

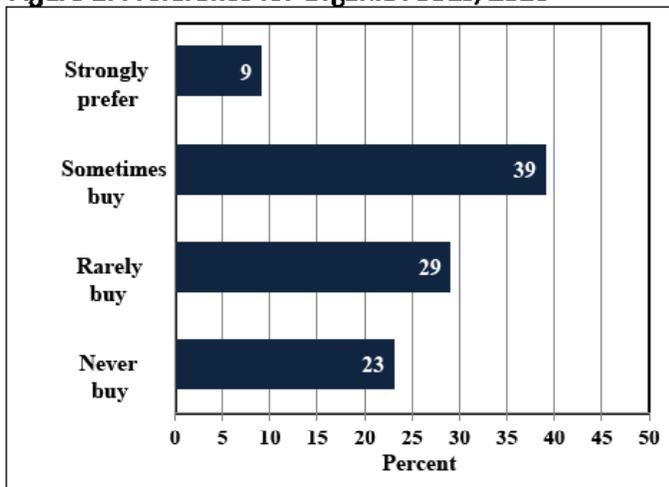
* Number of fast-food meals was collected in the 2008-9 annual survey.

entertained guests in their home about once each month or about 12 times a year. This result suggests that Generation X young adults are somewhat more social than all American adults as a group.

ORGANIC FOODS

If there is one distinctive food issue for Generation X, it is the widespread interest in and consumption of organic foods. In our 2010 annual survey, we asked young adults about their awareness of organic foods and their attitude toward using organic foods. Only seven percent of Generation X young adults said that they had little or no understanding of organic foods and 80% were able to provide an open-ended explanation of the meaning of organic foods. Given the extensive advertising of organic foods and products today, this is not a surprising result.

Figure 1: Preference for Organic Foods, 2010



When asked about their own shopping and buying preferences, only nine percent of Generation X young adults indicated that they strongly preferred to buy organic foods when they were available. An additional 39% of LSAY young adults reported that they sometimes buy organic foods, but not all of the time even when they are available (see Figure 1 and Table 2). Half of Generation X young adults buy organic foods rarely or not at all.

Given this almost even split between young adults who buy organic and those who do not, it is interesting to inquire into which young adults buy organic. Having observed that married women are more frequently engaged in food shopping and cooking, we expected that they might also be more aware of and more frequent buyers of organic foods. Not so. The various combinations of gender and marital status produced no statistically significant variations, with nine percent – give or take a percentage point – reporting that they regularly seek organic foods when they are available (see Table 2).

Since many young men in the LSAY sample also reported high levels of food shopping and cooking, we looked at the frequency of these food activities in a typical month regardless of gender or marital status. The results indicate that young adults who shop and cook 75 times a month or more were slightly more likely to buy organic foods, but only about two percentage points above the mean for all young adults. Moreover, the pattern of organic buying does not rise consistently with progressively more frequent personal involvement in food shopping and cooking. On balance, the frequency of food involvement is a weak predictor of buying organic.

The results from the 2010 LSAY annual survey indicate that young adults with more formal education tend to buy organic more often and that individuals who are scientifically literate are more likely to buy organic. The level of education itself is also a weak indicator of organic buying, but young adults who did not finish high school were significantly less likely to buy organic than other individuals (see Table 2). At the other end of the educational spectrum, 11% of young adults with an advanced degree reported that they regularly buy organic foods when they are available. This is only two points higher than the average of nine percent for all young adults, but it is a strong contrast with young adults with the least formal education.



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The best predictor of buying organic is an individual's level of civic scientific literacy. Over the last 25 years, the LSAY has measured the level of understanding of basic scientific concepts and terms – molecule, DNA, radiation, experiment, and similar core ideas – as well as some more applied scientific ideas and these questions have been combined into an Index of Civic Scientific Literacy. The Index ranges from zero to 100 and scores above 70 tend to reflect the ability to understand science news reports in major newspapers or on a PBS-Nova science television show. It is a measure of the kinds of science that a citizen needs to make decisions about issues in the news or in the supermarket – it is not a measure of occupational skills in science or engineering.

Using Miller’s Index of Civic Scientific Literacy, the data from the 2010 LSAY annual survey show that young adults with a higher level of scientific literacy were more likely to buy organic foods. Eleven or 12% of young adults with a score of 70 or higher on the civic scientific literacy index indicated that they regularly buy organic foods and approximately half of these young adults reported that they buy organic sometimes (see Table 2). In contrast, approximately six percent of young adults scoring less than 70 in this Index were regular buyers of organic foods and less than a third were occasional organic buyers.

Statistically, about a third of the variation in organic buying preferences can be explained by the individual’s level of scientific literacy. This finding is consistent with numerous other studies that demonstrate that adults with a stronger understanding of science are able to make sense of competing arguments about various subjects that involve science or technology. It is important to recognize that two-thirds of the variation in organic buying is not explained by scientific literacy, and we expect that a large part of individual organic buying decisions may be related to either the availability of organic products or the higher price of many organic foods.

GENETICALLY-MODIFIED FOODS

A second set of issues about foods involves genetically modified or GM foods. For centuries, farmers have used selective breeding and hybrid technologies (cross-fertilization) to produce agricultural products that have more pleasing characteristics (more white meat on chickens or turkeys, for example). As science has become able to identify and move individual genes in plants and animals, it is now possible to combine desirable characteristics and to remove undesirable characteristics (saturated fats, for example). In both Europe and the United States, some individuals and consumer groups have objected to the new manipulation of genetic material in plants and animals that are used for food.



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The 2010 LSAY annual survey asked its participants about their level of understanding of genetically-modified foods, how they learn about food-related issues, and the sources of information that they would trust in regard to an issue

like GM foods. The 2010 survey did not ask about personal purchasing behaviors because few genetically-modified products are labeled *per se* and many consumers would be unable to estimate how frequently they purchase or consume a genetically modified food product.

The term genetically modified foods entered the American vocabulary after most of the young adults in the LSAY had finished high school and college. A few individuals who majored in science or who returned to formal schooling a few years later may have encountered the term in a school setting, but the majority of young adults in the LSAY have learned about genetically modified foods by reading newspaper and magazine stories, watching television, looking at online news and science sites, and talking with their friends and co-workers. Because it is a term that requires some scientific understanding – knowing what a gene is and that humans have the ability to manipulate them – it is important to assess how much the young adults in Generation X understand about genetically modified foods.

Table 2: Preference for organic foods, 2010

		Purchase organic foods ...				N
		Always if available	Sometimes	Rarely	Never	
All Generation X young adults		9	39	29	23	3,080
Gender and Marital Status						
Female	Married	8	43	27	22	1,103
	Not married	10	35	28	27	440
Male	Married	9	40	29	22	1,128
	Not married	8	32	32	28	408
Frequency of shopping and cooking						
None to 24 times per month		8	34	29	29	818
25 to 49 times per month		9	35	32	24	864
50 to 74 times per month		7	44	29	20	770
75 or more times per month		11	46	23	20	627
Education						
Less than high school graduation		5	25	21	49	87
High school diploma or GED		8	29	32	31	1,312
Associate degree		9	35	32	24	248
Baccalaureate		10	47	26	17	881
Masters		9	53	27	11	403
Doctorate or professional degree		11	60	20	9	151
Index of Civic Scientific Literacy						
0 to 49		5	26	25	44	507
50 to 69		7	35	34	24	1,059
70 to 89		11	47	26	16	963
90 to 100		12	57	22	9	312
N = Number of respondents in each row.						

To measure the level of understanding, the 2010 LSAY annual survey included five questions about genetically modified foods and asked each respondent to indicate whether they thought that each statement was definitely true, probably true, probably false, or definitely false. Respondents were encouraged to check a “not sure” box rather than guess if they did not know the answer.



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- (1) Ordinary tomatoes, the ones we normally eat, do not have genes whereas genetically modified tomatoes do.
- (2) For centuries, farmers have modified their crops and animals through the use of cross-fertilization and selective breeding.
- (3) Genetically modified plants almost always require more pesticides than non-genetically modified plants.
- (4) The modification of plants to reduce the level of saturated fats is a beneficial use of genetic modification.
- (5) One of the possible negative consequences of the genetic modification of plants is that it may reduce the amount of variation in wild species.

The second, fourth, and fifth statement are true and young adults who indicated that one of these statements was definitely true received two points and those who said that the statement was probably true received one point. Statements one and three are not true and respondents received two points for saying that each of these statements was definitely false and one point for saying that it was probably false. The Index of GM Food Understanding ranged from zero to 10. The mean score on this index for LSAY young adults was 3.8, indicating a moderately low level of understanding. Only 16% of Generation X young adults scored seven or higher on the Index (see Figure 2). Forty-eight percent scored three or lower on the Index.

This low level of understanding of genetically modified foods reflects a basic problem in modern societies. Emerging scientific issues such as genetically modified foods occur after an individual has completed their initial formal schooling, leaving these individuals to use a combination of their previously acquired understanding of science (which is often referred to as scientific literacy) and current media sources to make sense of new issues and concepts. We would expect that young adults who have acquired a higher level of civic scientific literacy would be better able to understand emerging news about genetically modified foods than individuals with lower levels of scientific literacy, and the data from the LSAY support that expectation. Generation X young adults who scored 70 or higher on the Index of Civic Scientific Literacy had an average score of 5.2 on the Index of GM Food Understanding, compared an average score of 2.7 for young adults who had a lower scientific literacy score.

How do these differences in scientific literacy and understanding of GM foods influence Generation X? At present, it makes relatively little difference in food purchasing and use decisions because genetically-modified products are not segregated or labeled. But it does appear to make some difference in the kinds of information

Table 3: Understanding of Genetically Modified Foods, 2010

	Definitely true	Probably true	Not sure	Probably false	Definitely false
Ordinary tomatoes ...do not have genes, whereas genetically modified tomatoes do.	2%	8%	31%	17%	42%
For centuries, farmers have modified crops and animals through the use of cross-fertilization and selective breeding.	37	44	14	4	1
Genetically modified plants almost always require more pesticide than non-genetically modified plants.	2	13	42	29	14
The modification of plants to reduce the level of saturated fats is a beneficial use of genetic modification.	5	37	40	12	6
One of the possible negative consequences of the genetic modification of plants is that it may reduce the amount of variation in wild species.	9	35	41	12	3
Answers in red are correct and counted as two points toward the Index.					
Answers in blue are partially correct and counted as one point toward the Index.					
Number of cases = 3,080					



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sources that young adults trust in seeking information about genetically-modified foods or products. The 2010 LSAY annual survey asked each participant to indicate how much they trusted each of 17 possible information sources about genetically modified foods using a zero-to-10 scale. Zero indicated no trust in a particular source and 10 indicated complete trust in that source.

Generation X young adults placed more trust in the Food and Drug Administration (FDA) and the U. S. Department of Agriculture (USDA) than other sources, assigning mean scores of 7.0 and 6.8 respectively on a zero-to-10 scale (see Table 4). An agriculture professor in a state university was trusted at the same level. Young adults also expressed a high level of trust in science television shows such as Nova and the Discovery channel (6.4), information from Consumers Reports magazine (6.2), and an exhibit in a science museum (6.2). All of these sources reflect a high level of expertise and Generation X young adults appear to be able to identify credible sources on science-related topics.

General media sources received middling trust ratings. Generation X young adults gave a mean rating of 5.8 to stories in a weekly news magazine, 5.8 to newscasts on CNN or other cable news channels, 5.7 for network television newscasts, 5.7 for stories in the *New York Times* or similar national

newspapers, 5.5 for a television cooking show, 5.3 for a broadcast on National Public Radio (NPR), and 5.1 for a local television newscast. Although some of these media sources utilize specialized science reporters, new reports from these sources tend to be embedded in a more general news format and may lack the appearance of expertise associated with federal agencies or more clearly science-related sources.

The young adults participating in the LSAY expressed less confidence in food information from friends or family (4.9), a Wikipedia article (4.8), or a local newspaper story (4.7). These sources generally lack the sense of expertise associated with federal agencies or general national media, and Generation X adults indicate markedly lower levels of trust in these sources.

Interestingly, the least trusted source of information was a television commercial from a food company such as Kraft (3.5). Generation X young adults apparently recognize the commercial content of this kind of message and do not think of it as providing useful or unbiased information. In other reports, we have found that Generation X young adults do not trust energy information from energy companies or medical information from pharmaceutical companies. Even though the spokesperson may be standing in a green field or wearing a stethoscope, these young adults recognize the

Table 4: Trust in Selected Information Sources on Genetically Modified Foods, 2010

Information source	Mean		
	All young adults	CSL Index	
		0 to 69	70 to 100
Food and Drug Administration report	7.0	7.0	6.9
U. S. Department of Agriculture report	6.8	6.8	6.8
An agriculture professor from a state university	6.8	6.5	7.2
PBS-NOVA/Discovery TV show	6.4	6.1	6.8
<i>Consumers Reports</i>	6.2	6.1	6.4
Science museum exhibit or presentation	6.2	5.8	6.7
Weekly news magazine story	5.8	5.7	5.9
CNN or other cable newscast	5.8	5.9	5.7
Network TV newscast (ABC, CBS, NBC)	5.7	5.9	5.5
<i>New York Times</i> or <i>Wall Street Journal</i>	5.7	5.5	5.9
A cooking show on television	5.5	5.7	5.2
National Public Radio (NPR)	5.3	5.0	5.7
Local television newscast	5.1	5.3	4.9
A friend or a member of your family	4.9	5.0	4.9
Wikipedia article	4.8	4.9	4.6
Local newspaper story	4.7	4.8	4.6
Kraft or other food company commercial	3.5	3.9	3.0
Number of cases	3,070	1,564	1,272
Cell entries are the mean scores on a zero-to-10 scale.			

purpose of commercial messages and do not look to those sources for trustworthy information.

Does this pattern of information trust vary by an individual's level of scientific literacy? Do young adults who know or understand more about scientific terms and concepts trust information sources differently? The short answer is that there are only minor differences in the levels of confidence or trust expressed for different sources, but there are



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some interesting differences.

Regardless of their level of scientific literacy, young adults expressed a high level of confidence in the FDA and the USDA for food information. Scientifically literate young adults expressed

a significantly higher level of trust in an agriculture professor, a science television show, and a science museum than young adults with lower levels of scientific understanding (see Table 4). Scientifically literate young adults were slightly less trusting of major media sources – cable newscasts, network television news, or national newspapers – than young adults with lower levels of scientific understanding. This differential was especially strong for television cooking shows and food company commercials, which were trusted significantly less often by scientifically literate young adults. In general, it appears that scientifically literate young adults were better able to identify sources with a high level of expertise and were less trustful of general media sources than other young adults.

THE PERVASIVE INFLUENCE OF FOOD

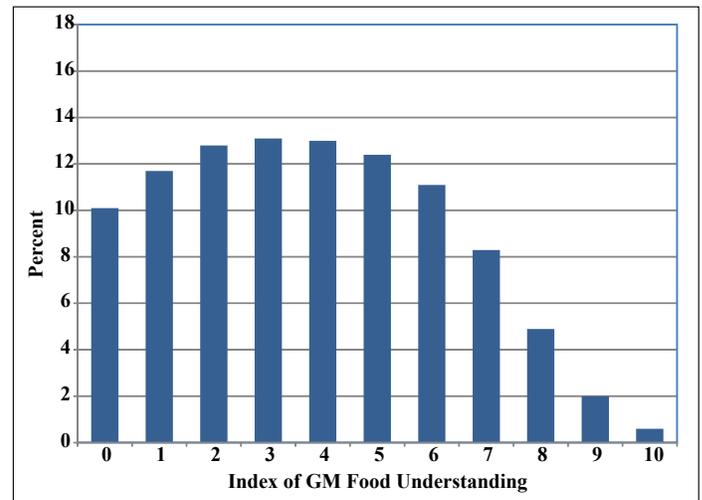
Food does more than provide necessary sustenance. All adults – including the young adults in Generation X – spend a good deal of time shopping for food, cooking it, sharing it with family and friends, and talking about it with other adults. Meals are often a time that families gather together to share information and experiences and can be a form of entertainment for one's family, friends, and neighbors.

In the 21st century, food often involves making judgments that may require some scientific understanding. In recent decades, organic foods and organic farming have become a part of the American vocabulary and most adults have

a reasonably clear understanding that organic foods are grown or raised with fewer pesticides or other chemicals. The data from the 2010 LSAY annual survey found that about half of Generation X young adults preferred to buy and use organic foods at least some of the time and that about one in ten are committed to buying organic when these products are available. Food stores and producers actively market organic products and there are now federal definitions and regulations about which products can be labeled as organic and which do not meet that standard.

The genetic modification of foods involves the extension

Figure 2: Scores on the Index of GM Food Understanding, 2010



of a traditional farming practice through the use of new and more precise methods to add, delete, or modify genetic material in plants and animals intended for food. Some consumer groups have expressed concern about the application of these new technologies while other groups have taken a more wait-and-see attitude. The debate over the genetic modification of food inevitably involves a more scientific discussion than was true of organic foods and most genetically modified products have found their way to the marketplace as one ingredient among several in food products that appear in stores. Most Generation X young adults appear to have a relatively low level of understanding or concern about genetically modified foods, but it is clear that scientifically literate young adults are more active in monitoring the news on this subject and that they are able to identify and use a variety of credible sources to monitor this subject.

These results indicate that Generation X young adults are active in shopping, cooking, and sharing food. They are aware of its sources and some of the controversies about its production, and they continue to read and talk about food – sharing their experiences and monitoring any potential problems.

A Brief History of the LSAY

Today, the Longitudinal Study of American Youth (LSAY) is the longest and most comprehensive longitudinal study of a national sample of public school students ever conducted in the United States.

To provide a more intensive longitudinal examination of the development of student achievement in middle school and high school (and the relationship of those patterns to career choices), the National Science Foundation (NSF) funded the LSAY in 1986. After a year of pilot testing of instruments, the LSAY began collecting data from a national sample of 7th and 10th grade students in 50 U.S. public school systems in the fall of 1987. During the next seven years, each of approximately 5,900 students in the two national probability cohort samples were given mathematics and science achievement tests (based on the National Assessment of Educational Progress item pools) each fall and were asked to complete attitudinal and self-report questionnaires each fall and spring.

In addition, one parent of each of the LSAY students was interviewed each spring by telephone, and all of the mathematics and science teachers who served one or more LSAY students were asked to complete a questionnaire for each course, including information about the objectives of the course, the textbook used, and the allocation of time and effort in the course to various kinds of instructional activities. The principal of each of the participating schools was asked to complete a school inventory and questionnaire periodically. The initial period of data collection ended in the spring of 1994 when the 7th-grade cohort was one year beyond high school and the 10th-grade cohort was four years beyond high school.

With support from the NSF STEP program in 2005, the LSAY was able to locate or account for more than 95% of the original sample of students. Data collection was resumed in 2007 and four additional cycles of data collection have been completed with NSF support.

The Generation X Report is based primarily on data from the Longitudinal Study of American Youth (LSAY). The LSAY has been funded by the National Science Foundation (NSF) since 1986 (NSF awards MDR-8550085, REC96-27669, RED-9909569, REC-0337487, DUE-0525357, DUE-0712842, DUE-0856695, DRL-0917535, DUE-1118625, DUE-1118626).

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the NSF.

We acknowledge the continuing cooperation and support of the more than 4,000 LSAY participants who have voluntarily

The LSAY participants in the two cohorts are now 36 and 39 years of age, respectively. Because of its extraordinary longitudinal record of these young adults – who represent the core of Generation X – the LSAY is committed to continuing an annual program of measurement and analysis in future decades.

During the years in which students were enrolled in middle school and high school, data were collected primarily through the use of printed questionnaires and tests administered in school by a local school staff member employed part-time by the LSAY. Teacher questionnaires were printed and collected by a combination of mail and the use of a local in-school coordinator. During the in-school years, one parent of each participating student was interviewed by telephone once each year. Currently, approximately 75% of participating young adults complete an annual questionnaire online and the remaining 25% use a printed questionnaire and a postage-paid return envelope. Current participants are offered a small payment in appreciation for their time and effort.

All of the data collection and data management procedures used by the LSAY are approved by the University of Michigan Institutional Review Board. In earlier years, LSAY data collection procedures were reviewed and approved by the Institutional Review Boards at Michigan State University, Northwestern University, and Northern Illinois University. The data are deposited (in a blinded format to protect the identity of individuals) in the Inter-university Consortium for Political and Social Research (ICPSR) at the University of Michigan and are available for secondary analysis according to ICPSR rules. Over the last two decades, LSAY data have been used in approximately 40 dissertations and more than 200 articles in refereed journals.

A more comprehensive description of the LSAY is available at www.lsay.org. ◆

completed questionnaires, telephone interviews, and data forms over the last 24 years and thank them for their continuing support. Without their active involvement, the LSAY would not be possible.

We also acknowledge and thank the parents of LSAY students and the teachers, principals, and administrators in public school districts throughout the U.S. who contributed their time and energy to this study.

And, we acknowledge and thank the several hundred staff who have worked on the LSAY over the last two decades to make this study possible.

