The Decline in Adult Activities Among U.S. Adolescents, 1976–2016

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The social and historical contexts may influence the speed of development. In seven large, nationally representative surveys of U.S. adolescents 1976–2016 (*N* = 8.44 million, ages 13–19), fewer adolescents in recent years engaged in adult activities such as having sex, dating, drinking alcohol, working for pay, going out without their parents, and driving, suggesting a slow life strategy. Adult activities were less common when median income, life expectancy, college enrollment, and age at first birth were higher and family size and pathogen prevalence were lower, consistent with life history theory. The trends are unlikely to be due to homework and extracurricular time, which stayed steady or declined, and may or may not be linked to increased Internet use.

Adolescence is a distinct developmental period of not only biological but also social transitions. In modern times, adolescence is seen as a transitional period between childhood and adulthood (Petersen, 1988; Steinberg & Morris, 2001), encompassing early adolescence (approximately ages 11–14), middle adolescence (15–17), and late adolescence (18–21). At base, adolescence is the process of becoming an adult, as teens begin to focus on activities relevant for reproduction, which include mating, strategic peer relationships, and becoming independent from parents (Ellis et al., 2012). Adolescents of the same chronological age vary in their developmental speed, with some moving quickly (and thus resembling adults more) and others moving more slowly (and thus resembling adults less).

One way to conceptualize adolescent development is life history theory, which dichotomizes approaches to development into slow and fast strategies. A slow life strategy involves delayed gratification with later reproduction, whereas a fast life strategy involves undertaking reproductive tasks and becoming independent of one's parents sooner (Figueredo et al., 2006; Mittal & Griskevicius, 2014). The adoption of a slow versus fast strategy depends on the social context experienced by the individual, particularly during early childhood (Simpson, Griskevicius, Kun, Sung, & Collins, 2012). Just as the social context varies among individuals and families, the social context also varies at the cultural level. Some cultures create contexts that promote a slow life history, and others promote a fast life history (Low, Hazel, Parker, & Welch, 2008). In addition, cultures can vary over time, creating the possibility that the speed of life histories may vary from one birth cohort (those born in a certain year) to another. Individuals born in a selected time period are known colloquially as a generation (such as the Millennials, born 1980–1994, or iGen, born 1995–2012; Twenge, 2017). Individuals of different birth cohorts experience different social contexts, with birth cohort a key influence on social development in particular (e.g., Baltes & Nesselroade, 1972; Bronfenbrenner, 1994; Elder, 1998; Twenge, 2014, 2017). In short, birth cohorts experience different cultures and contexts growing up, which may influence developmental speed.

One aspect of developmental speed during adolescence is how much teens engage in activities associated with adulthood. In modern U.S. culture, certain activities are rarely or never performed by children but are frequently performed by adults. These include having sex, dating, drinking alcohol, working for pay, going out without one's parents, and driving. Because adolescence is a time of transition, adolescents of the same chronological age will vary in whether, and to what extent, they engage in these adult activities. How much they do so can thus be considered one indicator of their developmental speed: Adolescents who engage in these adult activities are taking a faster path to adulthood

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and sexual maturity than those who do not. These activities are all relevant for reproduction and mating, and thus relevant to life history theory (Figueredo et al., 2006). Having sex and dating are both mating activities. Adolescents often use alcohol as a precursor to sexual activity, and alcohol use is related to number of sexual partners during adolescence and young adulthood (Dogan, Stockdale, Widaman, & Conger, 2010). Driving is related to dating and adolescent sexuality (Preusser, Leaf, Ferguson, & Williams, 2000), as it allows adolescents to go on dates without parent chaperones and explore their sexuality away from parental supervision (Struckman-Johnson, Gaster, & Struckman-Johnson, 2014). In general, adolescents must establish independence from their parents to facilitate mating and reproduction (Ellis et al., 2012); in modern times independence might involve working for pay (a form of economic independence), going out without one's parents, and driving. For boys in particular, working for pay and driving are also mechanisms for establishing mate value based on procurement of resources (Buss & Schmitt, 1993). Thus, adolescents who engage in these adult activities are taking a faster course to sexual and reproductive maturity, and those who forgo them are taking a slower path.

In this article, we investigate birth cohort differences in U.S. adolescents' engagement in adult activities, examining whether adolescents in recent years pursue a faster or slower developmental path than adolescents did in previous decades. To do this, we draw from seven large, nationally representative data sets (N = 8.44 million) that have surveyed U.S. adolescents (ages 13–19) since the 1970s, 1980s, or 1990s and into the 2010s, allowing the comparison of several generations of young people. These data sets each examine one or more adult activities such as having sex, dating, drinking alcohol, working for pay, going out without one's parents, and driving.

The current research has a similar theme but focuses on a different life stage, than previous work on slower development during young adulthood. Previous research found that young adults (ages 18–29) are taking longer than in past decades to reach adult milestones such as marriage, children, and steady jobs (e.g., Furstenberg, 2015; Settersten & Ray, 2010). This generational shift has been so fundamental that some have suggested young adults now be known by the new label "emerging adults" to highlight their self-exploration and delayed transitions to adulthood (e.g., Arnett, 2000, 2014). Here, we explore the possibility that a similar

historical trend of a slower developmental pathway has emerged at an earlier stage, from early adolescence to late adolescence (ages 11–18).

Predictions of Life History Theory

Life history theory posits that exposure to a harsh and unpredictable environment during childhood leads to a faster developmental path; conversely, a more resource-rich and predictable environment leads to a slower path. Life history theory posits that organisms have limited resources and can focus on either long-term cultivation of the individual or on earlier and more extensive reproduction (Figueredo et al., 2006). Resource-rich environments allow a longer cultivation of the individual (a slow strategy), whereas resource-challenged environments encourage early reproduction because survival is not as certain (a fast strategy). Generally, the childhood environment, particularly that of birth to 5 years old, is the most crucial, as that is when people are sensitized to their environments (Mittal & Griskevicius, 2014; Simpson et al., 2012). Thus, economic indicators such as the unemployment rate or median household income during early childhood might be important predictors. Family size is another indicator of resources; with more children, less is invested in each child, more typical of a fast life strategy, whereas fewer children per family means more parental investment in each, typical of a slow strategy (Bugental, Corpuz, & Beaulieu, 2014; Hogan & Kitagawa, 1985; Quinlan & Quinlan, 2007).

Generally, a fast life strategy involves earlier reproduction and a shorter life, whereas a slow life strategy means later reproduction and a longer life (Low et al., 2008). Thus, teen birth rates, mean age at first birth, and life expectancy at birth are relevant social indicators for the adolescent stage, as they indicate whether adolescents are taking a slow or fast path to reproduction and whether life is long or short. In addition, a slow path is associated with the delay of gratification, including extended schooling before reproduction commences (Bugental et al., 2014; Ellis et al., 2012). Thus, parents and the culture at large may attempt to slow down the developmental path of adolescence if extended schooling is anticipated. Here, the percentage of high school graduates who attend college or who expect to attend college might be relevant social indicators.

Given this previous research, life history theory predicts that adolescents will be slower to engage in adult activities directly or indirectly related to

reproduction in time periods with certain characteristics. During childhood, these characteristics include a more favorable economic climate and smaller family size. Concurrently during adolescence, these characteristics include lower teen pregnancy rates and more extended schooling.

The Current Research

We draw from seven large time-lag surveys of Americans designed to be nationally representative of each educational or life stage: the Monitoring the Future (MtF) surveys of (a) 8th, (b) 10th, and (c) 12th graders and follow-up surveys of (d) college students and (e) young adults; (f) the Youth Risk Behavior Surveillance System (YRBSS) of 9th, 10th, 11th, and 12th graders administered by the Centers for Disease Control (CDC) and Prevention; and (g) the American Freshman (AF) survey of entering college students (N across all seven surveys = 8.44 million). Because these projects survey individuals of the same age over many years (a time-lag design), they provide a view of time period and cohort change disentangled from age (Campbell et al., 2015; Schaie, 1965). That is, they compare adolescents of the same age (e.g., 12th graders) at different points in time (e.g., the late 1970s vs. the early 2010s) and thus across four generations (Boomers, GenX, Millennials, and iGen). With age held constant, differences are due to time period or cohort. We analyze the survey items assessing participation in adult activities such as having sex, dating, drinking alcohol, working for pay, going out without one's parents, and driving. For alcohol use, we were able to examine trends from 8th grade to young adulthood, determining whether alcohol use now begins at different age.

To consider other aspects of the social context, we examine the trends within gender, race or ethnicity, socioeconomic status, region, and urban versus rural location. This allows us to address whether the trends appear across all groups or only in some, and helps rule out (or in) the possibility that any trends in developmental speed are caused by changes in the demographic composition of the population. In addition, we examine trends in time spent on other activities including homework, extracurricular activities, and Internet use, as those may impact the amount of time adolescents have to spend on adult activities.

To provide theoretical explanations for the trends, we consider aspects of the historical context that co-occur or precede adolescent engagement in adult activities. We focus on aspects of the social context relevant for life history theory, especially those indicative of more (vs. less) parental investment, more (vs. less) economically prosperous times, and delayed reproduction. According to life history theory, less engagement in adult activities should be preceded by a childhood environment of smaller family size, lower unemployment, higher median household income, and longer life expectancy, as these aspects of the social context are sensitized during childhood (Mittal & Griskevicius, 2014). Other indicators, such as lower teen birth rates, higher age at first birth, and higher college enrollment (as tertiary education delays reproduction) are most relevant concurrently (during adolescence), as these represent the social context indicators of life speed during adolescence and young adulthood. (Note that these correlational analyses of concurrent variables examine co-occurrence, not predictors vs. outcomes). This approach of examining social indicators and behavioral variables by year has been used by several previous researchers (Grossmann & Varnum, 2015; Twenge, Campbell, & Carter, 2014). Such analyses cannot prove causation but indicate aspects of the social context that co-occur with behavioral indicators or, in the case of childhood context, precede them.

These analyses of adult activities go beyond previous work on the topic. To our knowledge, no previous study has examined birth cohort differences in adult activities among U.S. adolescents. Several other studies have used the MtF 12th-grade data to examine birth cohort differences but primarily to answer other questions (e.g., trends in civic engagement: Twenge, Campbell, & Freeman, 2012). Of the variables examined here, only the alcohol data have been previously analyzed (e.g., Jager, Schulenberg, O'Malley, & Bachman, 2013). The 8th- and 10th-grade MtF data have rarely been examined, and the AF survey's time-use questions have not been previously analyzed. Previous studies of adolescent time use have relied on small and selective samples and have not included data from the last 10 years (e.g., Zick, 2010). In addition to presenting previously unreported data, our study provides important conceptual contributions by examining historical change in the speed of adolescent development.

Method

Samples

MtF samples middle and high schools across the United States chosen to represent a cross-section of

the U.S. population (see http://www.monitoringth efuture.org). The participation rate of schools is between 66% and 80%, and the student participation rate is between 79% and 83% (Johnston et al., 2016). About 15,000 students in each grade (8th, 10th, 12th) are sampled each year in the spring. Some questions are only asked of subsamples (called a form). MtF surveyed a nationally representative sample of 12th graders (high school seniors) each year since 1976, and 8th and 10th graders since 1991 (on items included here, maximum N for 8th graders = 413,256; N for 10th graders = 380,925; and N for 12th graders = 582,692). MtF data are publicly available online as SPSS datafiles up to 2015 (Johnston et al., 2016), with the alcohol data for 8th, 10th, and 12th graders available for 2016. MtF has also conducted follow-up surveys of the 12th-grade sample, including college students (N = 29,080) and young adults ages 19–30 (N = 120,230), on drug and alcohol use, since 1991 (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2015). Across all years, the 8th, 10th, and 12th graders were 51% female and approximately 72% White, 14% Black, 10% Hispanic, and 4% other.

The YRBSS, administered by the CDC, has surveyed 9th, 10th, 11th, and 12th graders every other year since 1991, with data available to 2015 (N = 175,251). The YRBSS surveys a nationally representative sample of U.S. high school students (including both public and private schools) using a three-stage cluster sample design. Average school, student, and overall response rates are 78%, 86%, and 71%, respectively. The results are weighted to make the results nationally representative and control for student nonresponse (Brener et al., 2013). Respondents were 49% female and 62% White, 14% Black, 15% Hispanic, and 9% other races.

AF surveyed entering 1st-year students at 4-year colleges or universities since 1966, with the time-use questions first asked in 1987 (n 1987–2016 = 6.74 million). AF data are weighted to make them nationally representative of the population of students entering 4-year colleges and universities and are available as aggregated data by year up to 2016 (Eagan et al., 2016, 2017). Respondents were 52% female and approximately 80% White, 10% Black, 5% Hispanic, and 5% Asian American. Across all seven data sets, N = 8.44 million.

It should be noted that although the samples are nationally representative at each educational level, they do not include those who did not advance to that level (e.g., the 12th-grade sample does not include those who dropped out of high school

before then, and the entering college sample does not include those who did not enter a 4-year college as a freshman student).

These samples were nationally representative, so any demographic shifts reflect changes in the U.S. population as a whole at these educational levels. Nevertheless, it is important to determine if birth cohort trends appear among all groups or only some. Thus, we examined the results within gender, race or ethnicity, socioeconomic status (SES), region, and urban versus rural location where available. Gender is assessed in all data sets. Before 2005, MtF measured race only as White and Black; after 2005, it included categories for White, Black, and Hispanic. MtF does not include a measure of family income but does ask about parents' education level; we grouped students whose father had a high school degree or less (lower SES) and those whose father had attended at least some college and up (higher SES). MtF also codes U.S. region (Northeast, Midwest, South, and West), and the 12th-grade survey measures whether the student lives in an urban, suburban, or rural environment. The CDC data assess race (White, Black, Hispanic, and other) across the entire time period but does not report SES, region, or location. Data broken down by race, SES, region, or location is not available for the AF data set.

Measures

Adult Activities

Work at a job. MtF asked, "On the average over the school year, how many hours per week do you work in a paid job?" (for 12th graders, "paid or unpaid job") with response choices recoded to none = 0, 5 or less = 2.5, 6–10 = 8, 11–15 = 13, 16–20 = 18, 21–25 = 23, 26–30 = 28, and more than 30 = 35.

Another MtF item asked, "During an average week, how much money do you get from . . . a job or other work" with choices of "none" and varying dollar amounts. We recorded the percentage who answered anything other than "none" as an indication of those who received money from working.

Beginning in 1987, AF included a section with the following prompt: "During your last year in high school, how much time did you spend during a typical week doing the following activities?" One item was "working (for pay)," with response choices recoded to none = 0, less than 1 hr = 0.5, 1–2 hr = 1.5, 3–5 hr = 4, 6–10 hr = 8, 11–15 hr = 13, 16–20 hr = 18, and over 20 hr = 25.

Going out.   MtF asked, "During a typical week, on how many evenings do you go out for fun and recreation?" (with "Don't count things you do with your parents or other adult relatives" added for 8th and 10th graders), with response choices recoded as less than 1 = 0.25, 1 = 1; 2 = 2, 3 = 3, 4 or 5 = 4.5, 6 or 7 = 6.5. Less than 1 was recoded as 0.25 instead of 0.50 as "none" was not a response choice on this item.

Dating.   MtF asked, "On the average, how often do you go out with a date (or your spouse, if you are married)?" (for 12th graders) or "How often (if ever) do you go out with a date?" (for 8th and 10th graders), with response choices recoded to never = 0, once a month or less = 0.12, 2 or 3 times a month = 0.58, once a week = 1, 2 or 3 times a week = 2.5, over 3 times a week = 4. The calculations for the first two recodes were as follows: once a month or less = 0.50 times a month, divided by 4.3 (the average number of weeks in a month) = 0.12; 2 or 3 times a month = 2.5, divided by 4.3 = 0.58.

Driving.   MtF asked, "During an average week, how much do you usually drive a car, truck, or motorcycle?" with choices of "not at all" and ranges of miles. We recorded the percentage who answered anything other than "not at all." Twelfth graders were also asked: "Do you have a driver's license?" with choices of "yes," "no, but I soon will," and "no"; we recoded this into the percentage who answered "yes."

Alcohol use.   MtF asked, "On how many occasions have you had alcoholic beverages to drink— more than just a few sips . . . in your lifetime?" We recorded the percentage who had ever tried alcohol. The question wording was changed slightly in 1993; before that year it did not include the qualifier "more than just a few sips." This question was also asked of the MtF follow-up samples of college students and young adults (ages 19–30).

The AF survey asked two questions about alcohol use: "drank beer" and "drank wine or liquor," with choices of "frequently," "occasionally," and "not at all." The survey reported the percentage who answered "frequently" or "occasionally."

Sexual activity.   Ninth, 10th, 11th, and 12th graders in the YRBSS were asked if they had ever had sexual intercourse, with response choices of "yes" or "no."

Other Activities

Homework and extracurricular activities.   MtF asked, "About how many hours do you spend in an average week on all your homework including both in school and out of school?" with response choices recoded to 0 hr = 0, 1–4 hr = 2.5, 5–9 = 7, 10–14 = 12, 15–19 = 17, 20–24 = 22, and 25 or more = 30. There were two items on extracurricular activities using a 1–5 scale (1 = *never*, 2 = *a few times a year*, 3 = *once or twice a month*, 4 = *at least once a week*, and 5 = *almost everyday*): "participate in community affairs or volunteer work" and "actively participate in sports, athletics, or exercising."

AF also asked about hours per week spent on homework and extracurricular activities, with the items "studying/homework," "student clubs/ groups," "volunteer work," and "exercising or sports" using the same response choices as above for working for pay.

Internet use.   MtF asked, "Not counting work for school or a job, about how many hours a week do you spend on the Internet e-mailing, instant messaging, gaming, shopping, searching, downloading music, etc.?" Response choices from 2006 to 2009 were recoded using the midpoints of the ranges to none = 0, less than 1 = 0.5, 1–2 hr = 1.5, 3–5 hr = 4, 6–9 hr = 7.5, 10–19 hr = 14.5, 20–29 hr = 24.5, 30 or more = 35. In 2010, "30 or more" became 30–39 hr and a new choice, 40 hr or more, was added; we estimated these as 30–39 hr = 34.5 and 40 or more = 45.

Social Context Indicators

We gathered yearly social context indicators relevant to life history theory: family size (median children born per woman), unemployment, median household income, life expectancy, teen birth rate, mean age at first birth, college enrollment, expectations for college enrollment, pathogen prevalence, and the violent crime rate. Some social indicators were most relevant for the child environment, so we lagged them to the year when participants were 2 years old (as effects are strongest between the ages of 0 and 5: Simpson et al., 2012): these were total fertility rate (an indicator of family size), unemployment, and median household income. Life expectancy was for year of birth, as was family size. Other indicators were concurrent the teen birth rate, the mean age at first birth, the percentage of high school graduates enrolling in college, and the percentage in the 12th grade MtF survey who said they "definitely will" or "probably will" graduate from a 4-year college. We also included concurrent unemployment and median household income as indicators of current economic environment. These statistics were obtained from government sources

including the Bureau of Labor Statistics, the Department of Health and Human Services, The National Vital Statistics System, the Current Population Survey, and the FBI Uniform Crime Reports. We obtained pathogen prevalence from Grossmann and Varnum (2015).

Data Analysis Plan

Data collected over time can be analyzed in many ways, including grouping by 20-year generation blocks, by decades, or by individual year. For this study, we separated the data into 5-year intervals to provide both specificity and breadth. We calculate ds (difference in SDs) between three pairs of 5-year intervals corresponding to the starting points of each survey (1976–1979 for 12th graders, 1985–1989 for college, 1990–1994 for 8th and 10th graders, and the follow-up surveys of college students and young adults). We also provide the means and SDs so differences between all time points are apparent; thus, ds can easily be calculated between any of the time blocks. In addition, we include several figures that use the data from all years. We also include the correlation (r) between each variable and year to examine linear trends (this was possible only for the MtF and YRBSS data; the AF data are only available in the aggregate, so calculating rs with individual variance is not possible). There is not one solution to how to analyze data collected across time; we felt this approach balanced showing the full picture of the changes over time with a relatively parsimonious data analysis strategy.

Where possible, we took two approaches to reporting adolescents' activities: (a) the mean response or mean number of hours and (b) the percentage who engage in the activity at all. The percentage who ever engage in the activity is useful as it is less subject to the possible imprecision of the time-use estimates. Due to the very large sample sizes, we focused primarily on effect sizes rather than statistical significance, although the tables do also note statistical significance.

For the analyses examining demographic factors, we combined the five adult activities measured in MtF (working for pay at all, driving any miles, going out once a week or more, dating at all, and ever trying alcohol) for 12th graders. We added them together and then divided by 5 to obtain a composite average score for adult activities. We focused on 12th graders for these analyses as they were the only age group asked about urban versus suburban versus rural location.

For the analyses examining social context indicators, we matched the adult activities composite year by year with the social indicators. To include as many years of data as possible, we used the composite of five adult activities 1976–2015; however, as the wording of the alcohol item changed slightly in 1993, this composite includes some method variance during the early 1990s. Thus, we also present correlations with a composite of four adult activities excluding the alcohol item. We focused on 12th graders for these analyses as they were surveyed for the most years (since 1976, compared to 1991 for 8th and 10th graders).

Results

Adult Activities

In recent years, fewer adolescents engaged in activities rarely performed by children and often performed by adults, such as working, driving, going out, dating, having sex, and drinking alcohol (see Table 1). The declines in these activities were relatively recent, primarily appearing since 2000 (see Figure 1) and were considerable, averaging $d = -.50$ among 12th graders (see Table 2).

By the early 2010s, 12th graders went out less often than 8th graders did in the early 1990s (see Figure 2). Twelfth graders in the early 2010s went on dates about as often as 10th graders did in the early 1990s. Having sex went from being the majority experience for high school students (54% of 9th–12th graders in 1991) to the minority experience (41% in 2015; see Figure 3). The declines in having sex were largest for 9th graders and smallest for 12th graders.

Adolescents were also less likely to have ever tried alcohol (see Figure 4). The downward trajectory for alcohol use was more pronounced for younger individuals, with less change for older individuals. Since 1993, the percentage of 8th graders who have tried alcohol was more than cut in half (a 59% decrease), compared to a 40% decrease for 10th graders, 26% for 12th graders, 9% for college students, and 7% for young adults. Thus, recent adolescents try alcohol at older ages than adolescents in past decades.

The decline in adult activities appeared among boys and girls, Whites and Blacks, lower SES and higher SES adolescents, in all four regions of the United States, and in rural, urban, and suburban locations (see Table 2). The decline in having sex was larger among Black high school students (from 82% to 49%); however, the percentage of Hispanic

Table 1

American Adolescents' Engagement in Adult Activities, 1976–2016

Variable and age group	N	1976–1979	1980–1984	1985–1989	1990–1994	1995–1999	2000–2004	2005–2009	2010–2016	r with year	d 1976–1979 to 2010–2016	d 1985–1989 to 2010–2016	d 1990–1994 to 2010–2016
Work for pay (hr/week)													
8th	413,256	—	—	—	3.20 (6.37)	3.04 (6.29)	2.47 (5.85)	1.94 (5.25)	1.50 (4.63)	−.11	—	—	−.31
10th	380,925	—	—	—	5.20 (8.47)	5.78 (8.95)	4.85 (8.30)	3.96 (7.66)	2.52 (6.26)	−.10	—	—	−.38
12th (incl. unpaid)	582,692	14.54 (11.82)	13.86 (11.41)	14.13 (11.37)	13.53 (11.35)	13.95 (11.52)	13.15 (11.36)	11.87 (11.39)	9.30 (10.86)	−.11	−.46	−.44	−.38
College (AF)	6,739,855	—	—	11.26 (9.62)	10.30 (9.47)	10.94 (9.49)	10.28 (9.37)	9.05 (9.11)	6.66 (8.44)	—	—	−.52	−.41
Any money from working													
8th	178,526	—	—	—	63% (0.48)	60% (0.49)	51% (0.50)	40% (0.49)	32% (0.47)	−.15	—	—	−.66
10th	165,737	—	—	—	57% (0.49)	58% (0.49)	51% (0.50)	42% (0.49)	32% (0.47)	−.12	—	—	−.53
12th	565,659	76% (0.43)	75% (0.44)	—	72% (0.45)	73% (0.45)	70% (0.46)	65% (0.48)	55% (0.50)	−.11	−.45	−.43	−.36
College (AF)	6,739,855	—	—	74% (0.44)	71% (0.46)	73% (0.45)	71% (0. 0.46)	68% (0.47)	57% (0.49)	—	—	−.36	−.29
Have driver's license (% yes)													
12th	106,490	88% (0.33)	86% (0.34)	86% (0.35)	84% (0.36)	84% (0.37)	82% (0.38)	78% (0.41)	73% (0.44)	−.10	−.40	−.33	−.28
Drove any miles													
8th	150,120	—	—	—	30% (0.46)	29% (0.45)	28% (0.45)	26% (0.44)	23% (0.42)	−.04	—	—	−.16
10th	141,935	—	—	—	58% (0.49)	58% (0.49)	59% (0.49)	55% (0.50)	51% (0.50)	−.04	—	—	−.14
12th	579,758	87% (0.34)	85% (0.35)	85% (0.35)	84% (0.37)	84% (0.37)	84% (0.37)	80% (0.40)	76% (0.43)	−.07	−.29	−.23	−.21
Go out without parent (times/week)													
8th	396,198	—	—	—	2.45 (1.94)	2.50 (1.96)	2.38 (1.95)	2.31 (1.94)	2.07 (1.87)	−.06	—	—	−.20
10th	372,447	—	—	—	2.45 (1.75)	2.51 (1.79)	2.38 (1.79)	2.31 (1.79)	2.03 (1.72)	−.07	—	—	−.24
12th	581,029	2.87 (1.67)	2.67 (1.58)	2.71 (1.59)	2.69 (1.63)	2.75 (1.69)	2.73 (1.70)	2.65 (1.70)	2.43 (1.68)	−.04	−.26	−.17	−.16
Go out without parent (% 1/week or more)													
8th	396,198	—	—	—	78% (0.41)	79% (0.41)	76% (0.43)	74% (0.44)	69% (0.46)	−.06	—	—	−.20
10th	372,447	—	—	—	83% (0.38)	83% (0.38)	80% (0.40)	78% (0.41)	73% (0.45)	−.07	—	—	−.24
12th	581,029	93% (0.26)	92% (0.27)	92% (0.27)	91% (0.29)	91% (0.29)	90% (0.30)	89% (0.31)	85% (0.35)	−.06	−.26	−.23	−.19
Go on date (times/week)													
8th	395,846	—	—	—	.43 (0.86)	.43 (0.88)	.43 (0.88)	.43 (0.87)	.34 (0.78)	−.02	—	—	−.11
10th	371,922	—	—	—	.76 (1.09)	.74 (1.09)	.66 (1.05)	.62 (1.01)	.50 (0.92)	−.07	—	—	−.26
12th	575,637	1.28 (1.32)	1.28 (1.31)	1.32 (1.34)	1.28 (1.34)	1.20 (1.34)	1.10 (1.31)	.98 (1.25)	.76 (1.11)	−.12	−.43	−.46	−.42
Go on date (% ever)													
8th	395,846	—	—	—	51% (0.50)	51% (0.50)	50% (0.50)	50% (0.50)	43% (0.49)	−.03	—	—	−.16
10th	371,922	—	—	—	72% (0.45)	70% (0.46)	65% (0.48)	64% (0.48)	57% (0.50)	−.08	—	—	−.31
12th	575,637	86% (0.35)	87% (0.34)	87% (0.34)	84% (0.36)	81% (0.39)	76% (0.43)	71% (0.45)	63% (0.48)	−.18	−.55	−.59	−.50

Table 1
Continued

Variable and age group	N	1976–1979	1980–1984	1985–1989	1990–1994	1995–1999	2000–2004	2005–2009	2010–2016	r with year	d 1976–1979 to 2010–2016	d 1985–1989 2010–2016	d 1990–1994 to 2010–2016
Drink alcohol (% ever)													
8th	410,158	—	—	—	56% (0.50)	54% (0.50)	48% (0.50)	39% (0.48)	29% (0.45)	-.19	—	—	-.56
10th	369,148	—	—	—	72% (0.45)	71% (0.45)	68% (0.46)	61% (0.49)	51% (0.50)	-.14	—	—	-.44
12th	505,612	93% (0.25)	93% (0.25)	92% (0.27)	81% (0.39)	81% (0.40)	78% (0.42)	73% (0.45)	67% (0.47)	-.21	-.72	-.68	-.31
College (MtF)	29,080	—	—	—	89% (0.31)	88% (0.33)	86% (0.35)	85% (0.36)	80% (0.39)	—	—	—	-.24
Young adults (19–30)	120,230	—	—	—	92% (0.27)	91% (0.29)	90% (0.30)	88% (0.33)	87% (0.34)	—	—	—	-.16
Drinking, college (AF)													
Wine or liquor (frequently or occasionally)	6,602,399	—	—	66% (0.48)	55% (0.49)	54% (0.50)	53% (0.50)	47% (0.50)	40% (0.49)	—	—	-.53	-.31
Beer (frequently or occasionally)	6,602,399	—	—	63% (0.48)	54% (0.49)	51% (0.50)	46% (0.50)	41% (0.49)	35% (0.48)	—	—	-.58	-.39
Ever had sex (YRBSS)													
9th	42,842	—	—	—	38% (0.49)	38% (0.49)	34% (0.47)	33% (0.47)	29% (0.45)	-.08	—	—	-.20
10th	42,975	—	—	—	47% (0.50)	46% (0.49)	42% (0.50)	42% (0.49)	40% (0.49)	-.05	—	—	-.14
11th	44,380	—	—	—	59% (0.49)	53% (0.50)	53% (0.50)	53% (0.50)	52% (0.50)	-.04	—	—	-.15
12th	45,054	—	—	—	68% (0.47)	64% (0.48)	61% (0.49)	63% (0.48)	62% (0.48)	-.04	—	—	-.12

Note. All *d*s correspond to *t* tests with $p < .001$. Dashes indicate that the item was not asked of the population during those years or that the statistic cannot be computed. Only the 8th-, 10th-, and 12th-grade data on alcohol use include 2016. The wording of the alcohol item changed in 1993; thus, only data after 1993 are reported for 12th graders for 1976–1979, 1980–1984, and 1985–1989 with the different wording are reported for purposes of comparison. d = difference in standard deviations; AF = American Freshman; MtF = monitoring the future; YRBSS = Youth Risk Behavior Surveillance System.
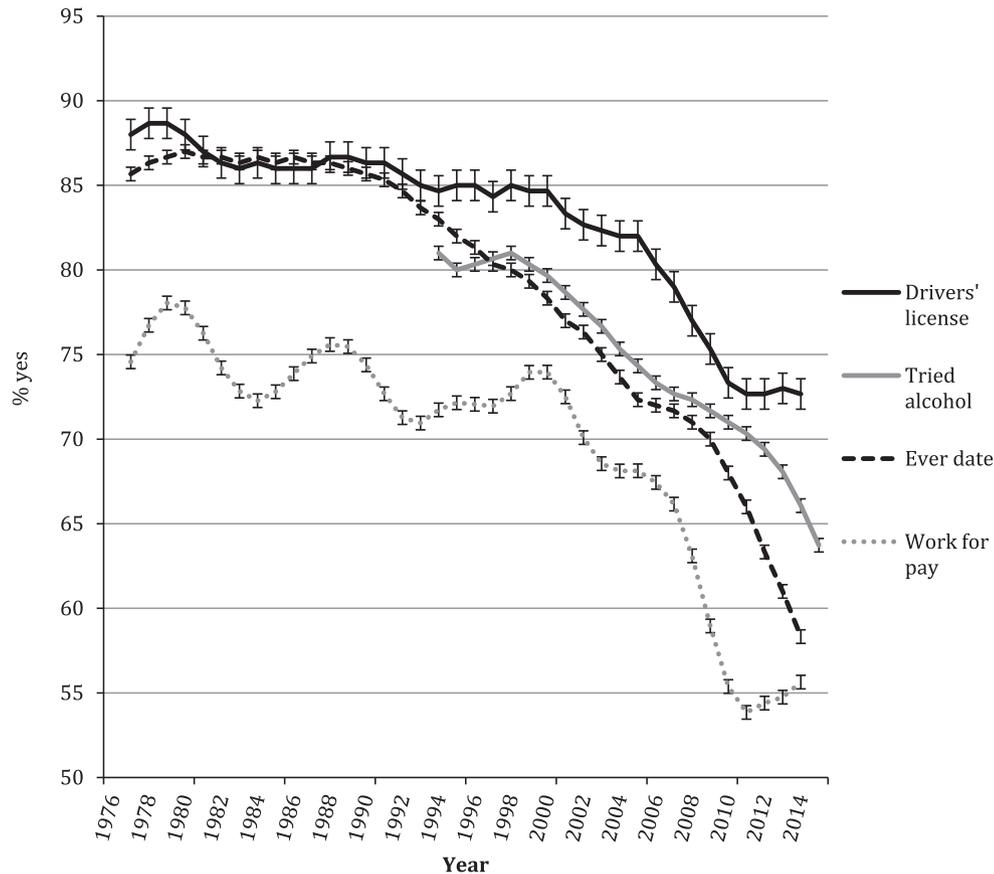
Figure 1. Percentage of U.S. 12th graders who have a driver's license, have ever tried alcohol, who ever go out on dates, and who work for pay, 1976–2016 (3-year centered moving average with standard errors).

and White students having sex also declined (from 53% to 43% for Hispanics and from 50% to 40% for Whites). Overall, these results suggest that demographic shifts are not a primary cause or a confounder of the trends; if they were, we would expect to see little change within racial and SES groups. Instead, the decline in adult activities appears across all groups regardless of gender, race, SES, region, or urban/rural location, suggesting a broad-based shift over time.

Alternative Explanations for the Trends

The decrease in driving was not due to age; in fact, the percentage of 12th graders who were 18 or older at the time of the survey in April was actually higher in recent years (57% in 2015 compared to 53% in 1997 when age was first measured). In addition, the decline in having a driver's license was fairly similar in areas where ride-sharing services such as Uber are more popular (urban areas, where 75% of 12th graders had a driver's license in 2000 compared to 62% in 2015) and less popular or not available at

all (rural areas; where those with a driver's license dropped from 90% to 77% between 2000 and 2015).

Perhaps recent adolescents are spending less time working for pay and going out because they are spending more time on homework and extracurricular activities. However, 8th and 10th graders in the 2010s spent *less* time on homework than they did in the 1990s, 12th graders somewhat less, and entering college students about the same amount (see Table 3). Time spent on extracurricular activities was fairly constant with the exception of community service or volunteering, which increased among 10th and 12th graders and college students. The increases were also small: college students in the 2010s spent about 11 more minutes a day on volunteer work than those in the late 1980s. Thus, the decline in adult activities among adolescents does not appear to be due to time spent on student work such as homework volunteering, and extracurriculars, as the time spent on these activities in total has decreased among 8th and 10th graders, is roughly constant among 12th graders, and increased only slightly among entering college students.

Table 2

Engagement in Five Adult Activities (Average Percent) by Gender, Race/Ethnicity, Socioeconomic Status, Region, and Location (Urban/Rural/Suburban), 12th Graders, 1993–2015

	N	1993–1994	1995–1999	2000–2004	2005–2009	2010–2015	r with year	d 1993–1994 to 2010–2015
All	245,588	82% (0.21)	82% (0.21)	80% (0.22)	76% (0.24)	70% (0.26)	−.22	−.50
Gender								
Males	112,778	83% (0.20)	83% (0.20)	81% (0.22)	77% (0.24)	71% (0.25)	−.25	−.51
Females	125,369	81% (0.21)	81% (0.21)	79% (0.22)	75% (0.24)	69% (0.26)	−.20	−.49
Race/ethnicity								
White	157,215	86% (0.18)	86% (0.18)	84% (0.20)	80% (0.21)	74% (0.24)	−.21	−.54
Black	28,147	73% (0.23)	74% (0.24)	71% (0.25)	68% (0.26)	60% (0.27)	−.18	−.50
Hispanic	16,428	—	—	—	71% (0.25)	66% (0.26)	−.12	—
SES								
Lower SES	96,758	82% (0.21)	82% (0.21)	80% (0.22)	76% (0.24)	70% (0.26)	−.21	−.49
Higher SES	130,800	84% (0.20)	83% (0.20)	81% (0.21)	77% (0.23)	71% (0.25)	−.23	−.55
Region								
Northeast	50,574	82% (0.21)	82% (0.22)	80% (0.22)	77% (0.24)	71% (0.26)	−.19	−.45
Midwest	60,890	86% (0.18)	84% (0.19)	82% (0.20)	79% (0.22)	73% (0.25)	−.22	−.57
South	83,052	82% (0.21)	83% (0.20)	80% (0.22)	76% (0.24)	69% (0.26)	−.22	−.53
West	51,072	78% (0.23)	79% (0.22)	77% (0.23)	72% (0.24)	66% (0.26)	−.26	−.48
Location								
Rural	97,544	83% (0.20)	84% (0.20)	82% (0.21)	78% (0.23)	72% (0.25)	−.20	−.47
Suburban	55,230	85% (0.19)	83% (0.20)	81% (0.21)	77% (0.23)	71% (0.25)	−.26	−.60
Urban	73,328	80% (0.22)	80% (0.22)	78% (0.23)	84% (0.24)	67% (0.26)	−.22	−.52

Note. All *d*s correspond to *t* tests with *p* < .001. The five activities are working for pay, ever dating, going out once a week or more, driving any miles, and ever trying alcohol. Higher SES = father has at least some college education. All *r*s are significant at *p* < .001. *d* = difference in standard deviations; SES = socioeconomic status.

Internet use has changed more, with 12th graders in the early 2010s spending 11 hours a week online. However, many of the declines in adult activities began before the Internet became widely used. Thus, Internet use does not appear to be the sole cause of the decline in adult activities, though it may play a role in the changes between the mid-2000s and mid-2010s.

Social Context Indicators

Next, we examined aspects of the social context related to developmental speed that might co-occur with adolescent participation in adult activities. These analyses cannot show causation but demonstrate the social conditions present during childhood and adolescence relevant for life history theory. We first considered the social context of the participants' early childhood. Adolescents were more likely to participate in adult activities when, as young children, the average family size was larger (and thus parental investment in each child lower), life expectancy was lower, pathogen prevalence was higher, and median household income was lower (see Table 4). Consistent with life history theory, the correlation between adult

activities and median household income was higher for the childhood years than concurrently. However, the unemployment rate was not significantly correlated at either age. Somewhat inconsistent with life history theory, high rates of violent crime at age 2 were correlated with fewer adult activities at age 18, and high rates of violent crime at age 18 were correlated with more adult activities.

Adult activities also co-occurred with indicators of the speed of reproduction. Adolescents were more likely to engage in adult activities when the teen birth rate was higher, the mean age at first birth for women was lower, and expected and actual college enrollment was lower. Thus, consistent with life history theory, more adolescents engaged in adult activities when reproduction occurred at younger ages, and fewer adolescents engaged in adult activities when reproduction occurred at older ages (see Table 4).

Discussion

Fewer iGen adolescents in the 2010s (vs. previous generations) participated in adult activities such as
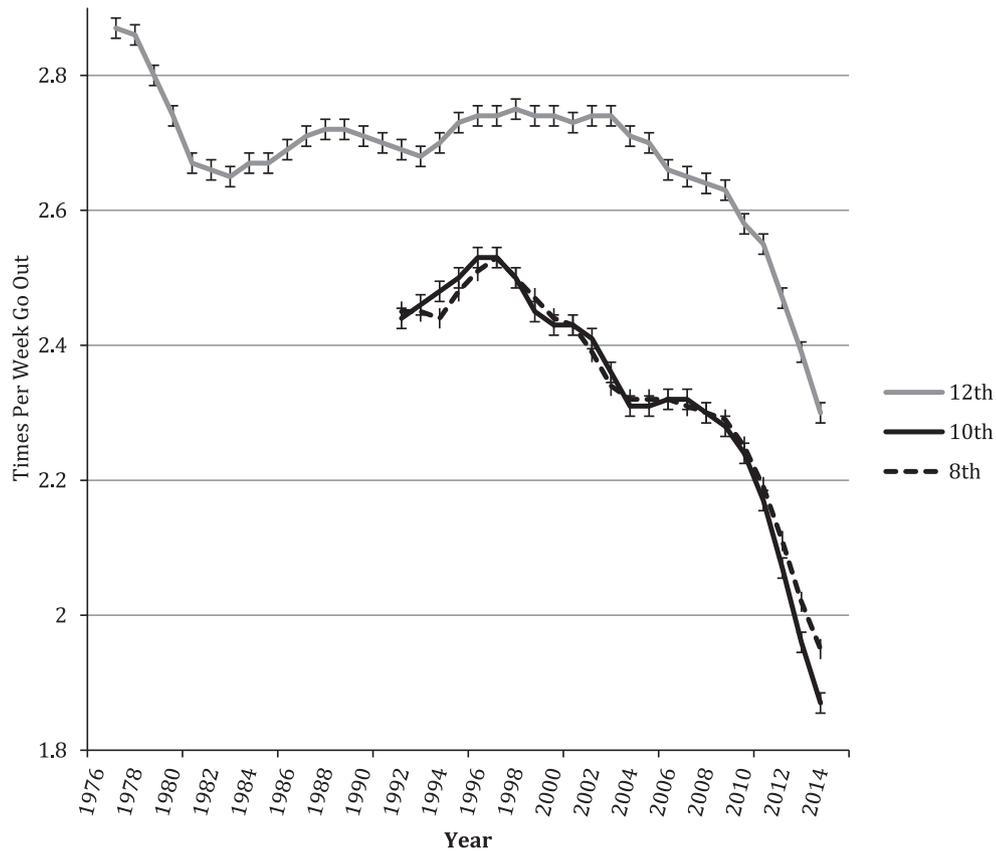
Figure 2. Times per week U.S. 8th, 10th, and 12th graders go out without their parents, 1976–2015 (3-year centered moving average with standard errors).

having sex, dating, drinking alcohol, working for pay, going out without one's parents, and driving. The decline appears in seven nationally representative samples with survey data spanning several decades (N = 8.3 million). The declines are not explained by homework or extracurricular activities, as time on these activities has decreased among 8th and 10th graders and was fairly steady among 12th graders and college students. The trend appears across demographic groups (including within gender, race or ethnicity, SES, region, and urban vs. rural location), suggesting a broad-based cultural shift. Consistent with life history theory (e.g., Bugental et al., 2014; Ellis et al., 2012), fewer adolescents engaged in adult activities when the childhood environment included lower family size, higher median household income, higher life expectancy, and low pathogen prevalence, and when the adolescent environment featured low teen birth rates, a higher mean age at first birth, and higher college enrollment. An economically rich social context with higher parental investment in fewer children, greater life expectancy, fewer dangers from pathogens, and the expectation of tertiary education

and later reproduction has produced a generation of young people who are taking on the responsibilities and pleasures of adulthood later than their predecessors.

These results have implications for theories of development. With the developmental pathway of adolescence slowed, childhood lasts longer and adolescence is delayed. Previous research has shown a slowed pathway for development during young adulthood (Arnett, 2000). Thus, it appears that the entire developmental trajectory from early adolescence to mature adulthood is slower than it once was. Future research should explore whether older children (e.g., ages 8–12) are now behaving more like younger children (e.g., if they are not accorded as many freedoms as children once were at that age or have not developed the same skills). If so, it would suggest a broad slowing of the developmental time course from middle childhood to full adulthood.

The idea of a slower developmental path provides an alternative interpretation for popular-press observations about today's youth. For example, Finkelhor (2014) argued that iGen adolescents are

Figure 3. Percentage of high school students who have had sexual intercourse, 1991–2015 (with error bars; moving averages not used as data are every other year).

more "virtuous" and "responsible" than previous generations, bringing "delinquency, truancy, promiscuity, alcohol abuse, and suicide down to levels unseen in many cases since the 1950s." Others spin these trends more negatively by declaring that today's youth are "boring" as they do not engage in adult-like pleasures such as alcohol use (Williams, 2014). However, adolescents are also less likely to work for pay or drive, activities not necessarily associated with being more (or less) "virtuous," "responsible," or "boring." Thus, these findings do not, on the whole, support the idea that adolescents have become more responsible, virtuous, or boring (and thus perhaps *more* like adults). Instead teens are engaging in fewer adult activities and growing up more slowly (and are thus *less* like adults). Crucially, life history theory argues that neither the slow or fast developmental path is inherently good or bad; instead, each is a response to the social context (e.g., Ellis et al., 2012). The social context experienced by recent cohorts of adolescents, with greater parental investment and longer life expectancies, encourages long-term development and the postponement of reproduction, and adolescents (and

perhaps their parents) have responded to this context.

Overall, late adolescents look more like middle adolescents once did, and middle adolescents look more like early adolescents once did. This pattern is also vividly illustrated by the generational differences in alcohol use by age group. Young adults' alcohol use has declined only slightly, whereas young teens' alcohol use has plummeted, suggesting that young people are postponing trying alcohol until later. The vast majority will eventually drink alcohol, but they are doing so at older ages than in previous generations. The lowered prevalence of these six different adult activities suggests not greater responsibility but instead a slowing of the developmental path postponing both the pleasures and responsibilities associated with adulthood and sexual maturity.

Limitations and External Explanations

This research has its limitations and alternative explanations. First, the time-use survey questions included in these data sets are not ideal. The gold
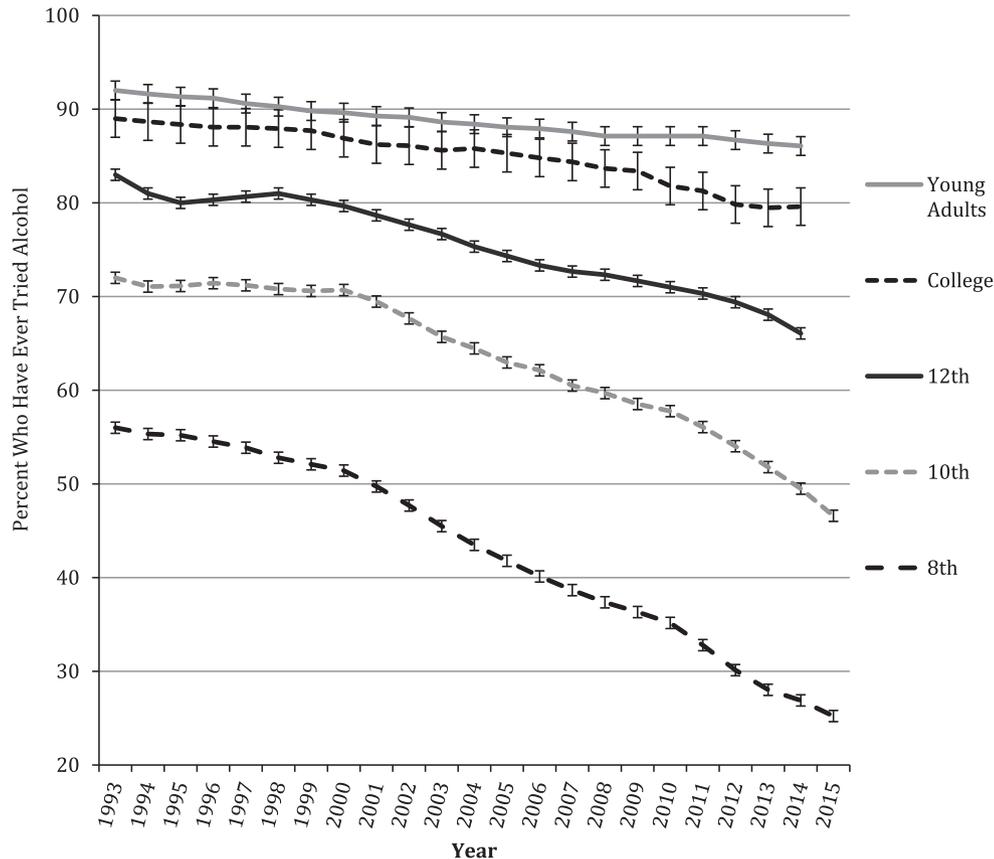
Figure 4. Percentage of 8th, 10th, and 12th graders, college students, and young adults who have ever tried alcohol, 1993–2016 (3-year centered moving average with standard errors).

standard in time-use research is experience sampling, in which respondents are alerted through a beeper or cell phone text to record what they are doing. However, experience-sampling methods are relatively recent, and (to our knowledge) have not been used in nationally representative samples going back many decades. Survey time-use measures have obvious limitations, as respondents must reconstruct how they spent their time. Fortunately, comparisons of survey responses and experience sampling find that survey estimates are consistent with experience sampling results, especially for regularly occurring activities (Sonnenberg, Riediger, Wrzus, & Wagner, 2012).

Nevertheless, we must address the limitations of the time-use measures here. Some items include response choices that are very broad (e.g., "once or twice a month," "at least once a week."). Other items ask respondents to estimate the number of hours a week they spend on activities on average. As time use may vary quite a bit from week to week, this is a difficult task prone to error. In addition, the items asking for responses based on ranges of hours (e.g.,

"6–10 hours") are also imprecise, as they assume an average when the true number for each individual varies within this range. Thus, the number of hours spent on activities (as shown in Tables 1 and 3) are likely imprecise, and this should be kept in mind. However, because the measurement was the same across the years, and these surveys are always administered at the same time of year, this imprecision should be relatively constant across years and, in theory, should not confound the birth cohort differences. In addition, we also included the percentage of adolescents who engaged in the activity at all, and the effect sizes for these comparisons are similar to those relying on estimated hours.

The use of six different activities helps guard against the possibility that the decline is due to specific factors influencing certain activities. Nevertheless, some limitations of the individual activities should be addressed. For example, some U.S. states introduced "graduated" driver's licenses with restrictions on driving situations (such as at night or with passengers) over this time period. However, all states and the District of Columbia currently

Table 3
Time Spent on Other Activities, 1976–2016

	N	1976–1979	1980–1984	1985–1989	1990–1994	1995–1999	2000–2004	2005–2009	2010–2016	r with year	*d* 1976–1979 to 2010–2015	*d* 1985–1989 to 2010–2016	*d* 1990–1994 to 2010–2016
Homework (hr/week)													
8th	409,971	—	—	—	7.70 (7.29)	7.02 (6.82)	6.59 (6.66)	5.78 (6.13)	5.47 (5.99)	−.10	—	—	−.34
10th	379,581	—	—	—	8.53 (7.65)	7.90 (7.39)	6.99 (6.92)	6.77 (6.87)	7.29 (7.23)	−.08	—	—	−.17
12th	92,897	7.01 (6.96)	7.28 (7.16)	7.19 (7.04)	6.93 (7.16)	6.61 (6.97)	6.02 (6.48)	5.99 (6.58)	6.34 (6.95)	−.07	−.10	−.13	−.08
College (AF)	6,739,855	—	—	6.79 (5.67)	6.42 (5.66)	6.11 (5.73)	5.66 (5.65)	5.58 (5.66)	6.48 (6.15)	—	—	−.05	.01
Sports/exercise													
8th (1–5)	421,236	—	—	—	4.04 (1.29)	4.03 (1.29)	4.01 (1.30)	4.06 (1.29)	4.02 (1.31)	.00	—	—	−.02
10th (1–5)	385,392	—	—	—	3.99 (1.33)	3.96 (1.33)	3.92 (1.36)	3.96 (1.35)	3.99 (1.35)	−.01	—	—	.00
12th (1–5)	175,981	3.93 (1.25)	3.97 (1.23)	3.87 (1.27)	3.83 (1.32)	3.82 (1.32)	3.78 (1.34)	3.80 (1.34)	3.86 (1.31)	−.02	−.05	.01	.02
College (AF; hr/week)	6,739,855	—	—	8.27 (7.50)	8.39 (7.64)	8.65 (7.84)	8.38 (7.78)	8.48 (7.79)	8.52 (7.74)	—	—	.03	.02
Student clubs (hr/week)													
College (AF)	6,602,399	—	—	3.27 (4.87)	3.27 (4.93)	3.05 (4.76)	3.03 (4.80)	3.07 (4.87)	3.14 (4.91)	—	—	−.03	−.03
Volunteering													
8th (1–5)	420,332	—	—	—	2.02 (1.02)	2.07 (1.01)	2.04 (0.99)	2.02 (1.00)	2.04 (1.01)	.00	—	—	−.03
10th (1–5)	385,224	—	—	—	2.04 (0.99)	2.12 (0.99)	2.13 (0.99)	2.14 (1.00)	2.21 (1.00)	.04	—	—	.17
12th (1–5)	175,920	2.02 (0.98)	2.03 (0.98)	2.01 (0.97)	2.07 (1.01)	2.20 (1.03)	2.26 (1.03)	2.25 (1.03)	2.30 (1.04)	.10	.27	.28	.22
College (AF; hr/week)	6,602,399	—	—	1.35 (3.31)	1.71 (3.63)	2.08 (4.01)	2.41 (4.47)	2.45 (4.46)	2.66 (4.54)	—	—	.33	.23
Internet (hr/week)													
8th	39,998	—	—	—	—	—	—	7.26 (9.39)	9.18 (12.72)	.12	—	—	.17
10th	46,908	—	—	—	—	—	—	7.82 (9.45)	10.29 (12.57)	.14	—	—	.22
12th	22,160	—	—	—	—	—	—	7.41 (9.21)	12.04 (13.55)	.21	—	—	.39

Note. All *d*s > |.03| correspond to *p* < .001. Dashes indicate that the item was not asked of the population during those years. *d* for Internet compares 2006–2009 to 2010–2015. All *r*s ≥ ± .01 are significant at *p* < .001. *d* = difference in standard deviations; AF = American Freshman.

Table 4

Correlations Between 12th Graders' Adult Activities and Social Context Indicators, 1976–2015

	Five adult activities	Four adult activities
Family size	.66***	.48***
Unemployment rate at age 18	.08	−.09
Unemployment rate at age 2	−.06	.10
Median household income at age 18	−.67***	−.47***
Median household income at age 2	−.84***	−.81***
Life expectancy at birth	−.95***	−.83***
Birth rate, 15- to 17-year-olds	.88***	.90***
Birth rate, 18- to 19-year-olds	.81***	.89***
Mean age at first birth, women	−.92***	−.81***
College enrollment (actual)	−.88***	−.75***
Expect 4-year college degree	−.86***	−.72***
Pathogen prevalence age 18	.90***	.74***
Pathogen prevalence age 2	.75***	.84***
Violent crime rate age 18	.65***	.72***
Violent crime rate age 2	−.84***	−.69***

Note. The five activities are working for pay during the school year, ever dating, going out once a week or more, driving any miles, and ever trying alcohol. The composite with four activities excludes trying alcohol, as the wording of this item changed in 1993.

***$p < .001$.

allow teens to obtain a driver's license allowing unsupervised driving by 17 (Governors Highway Safety Association, 2015), so this should not have affected the 12th-grade sample, virtually all of whom are at least 17 years old, and most 18 years old (the survey is conducted in April of the senior year). Another way to address this is by examining changes in the Western region, where the highest percentage of states (85%, 11 of 13, including California) allow full, unrestricted driving privileges by age 17. In that region, the decline in having a driver's license was just as large or larger, from 89% in the late 1970s to 65% in the early 2010s. The item asking about miles driven also somewhat negates this concern, as adolescents may drive with a learner's permit. The decline is unlikely to be due to ride-sharing services such as Uber: The decline in driving began before these services premiered in 2009 and has stayed steady, rather than accelerating, since then, and, as presented in the results, the decline is about the same magnitude in rural areas where these services were often unavailable. In addition, ride-sharing services cannot explain the reduction in driving among 8th or 10th graders, as users are required to be 18. Finally, the introduction of graduated drivers' licenses could in and of themselves be seen as indicating a shift in attitudes around adolescents' adult activities. The same is

true for the enforcement of laws around underage drinking. If these laws were more stringently enforced in recent years, it may partially explain the decline in adolescent alcohol use. Like the laws around driving, however, increased enforcement may indicate a general shift in adults' attitudes toward adolescents' developmental speed.

The decline in dating could be due to varying definitions of dating; however, the decline in dating was similar to the decline in going out, a term that is unlikely to have changed in meaning. Having sex, a less ambiguous marker of adult relationships than dating, also declined. The decline in working could be due to economic cycles if, for example, higher unemployment rates led to adults taking the jobs adolescents might otherwise have. However, concurrent unemployment rates were unrelated to the index of five adult activities and were also not significantly correlated with the percentage of 12th graders with a paid job when matched by year, $r(40) = −.25$, $p = ns$ (we focused on 12th graders as they were the only group with data beginning in 1976 and thus provide the most complete historical picture). However, the negative correlation suggests there may be some relationship between overall unemployment rates and adolescent employment. On the other hand, economic factors cannot fully explain the trends, as the changes in the unemployment rate (a useful proxy for the overall health of the economy) are cyclical, and the trends in adult activities are fairly linear.

One external factor that cannot be completely ruled out, at least as a partial cause, is increased Internet use. Internet use cannot be the sole cause of the trends, as the decline in adult activities began before broadband Internet and smartphones were available. It is also unclear how Internet use could cause teens to work less and drink alcohol less. However, the increase in Internet use may be at least partially responsible for the steep and recent declines in going out and dating, as these in-person activities may have been replaced by online communication with peers. However, the causation could also be reversed: Perhaps teens go out less due to parental restrictions and thus communicate online more. The exact role of Internet use on trends in the developmental speed of adolescents awaits further research.

The six adult activities we examined here all suggest a slower developmental path for adolescents. However, another trend not analyzed here does not fit this model: Physical puberty began at earlier ages in recent generations compared to their predecessors (Pierce & Hardy, 2011). Life history theory

would predict the opposite, with later physical puberty in this social context. Stronger forces, likely physiological rather than social, must be causing earlier puberty (candidates include higher body mass indices, rich diets, and pseudoestrogens in the environment; Biro & Kiess, 2016). These discrepant trends have social implications as well. With psychological and behavioral maturity delayed compared to previous eras, there is a longer stage in which adolescents are physically mature, with the bodies of adults, yet are less likely to engage in adult activities (including those directly associated with reproduction such as having sex). Adolescents today thus look like adults when they are chronologically younger but act like adults when they are chronologically older.

The links between more adult activities and high crime rates at age 2 and lower crime rates at age 18 also does not fit the life history model, which would instead predict that a dangerous environment during childhood would be associated with a fast life strategy. This pattern may have occurred because violent crime is a low base rate event that leads to vigilance rather than to greater family size. If the violent crime rate is high, parents may develop an urge to protect children, leading adolescents to later engage in fewer adult activities. This in turn may lower the crime rate if fewer adult activities result in fewer adolescents committing crimes. However, the causes of trends in crime rates are complex, so these ideas are necessarily speculative.

Conclusions

In sum, adolescents in recent years are less likely than their predecessors to engage in activities rarely performed by children but often performed by adults, such as having sex, dating, drinking alcohol, working for pay, going out without one's parents, and driving. Consistent with life history theory, adolescents are pursuing a slower life strategy in a social context of greater parental investment, lengthened education, delayed reproduction, lower pathogen prevalence, and longer lives. The developmental trajectory of adolescence has slowed, with teens growing up more slowly than they once did.

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