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Chapter 9

SCREEN USE AND SUICIDE IN US YOUTH: WHAT IS THE EVIDENCE?

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ABSTRACT

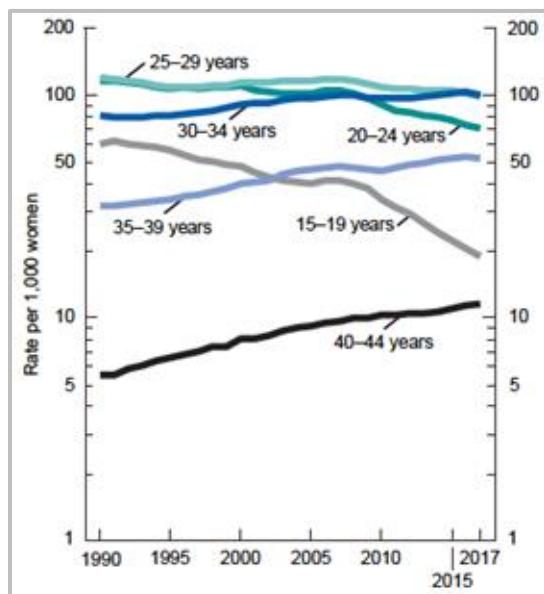
Recent increases in suicide in U. S. adolescents have raised concerns about the effects of heavy screen-media use by young people. We review the evidence regarding changes in adolescent health and well-being over the past several decades and evaluate the hypothesis that increasing screen use by adolescents and young adults (ages 15-24) is the source of increases in suicide in the past decade. We compare this screen-dysphoria hypothesis with one that focuses on economic challenges that confront both parents and young people and that have intensified since the 2008 financial crisis.

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TODAY'S ADOLESCENTS ARE RELATIVELY HEALTHY

Despite recent concerns about rising suicide rates in U. S. adolescents and young adults (National Center for Health Statistics, 2018; Orben & Przybylski, 2019a; Twenge, Cooper, Joiner, Duffy, & Binau, 2019; Twenge, Joiner, Rogers, & Martin, 2018), adolescents have experienced steady declines in unhealthy outcomes. As seen in Figures 1 to 3, there has been steady improvement in adolescent pregnancy, drug use, and driver fatalities over the past several decades. In contrast, although suicide rates among both males and females have declined since the 1980's, they have increased again since 2008 (Figure 4). According to the Youth Risk Behavior Survey (YRBS; Centers for Disease Control and Prevention, 2018), the rise in suicide has been paralleled by an increase in reports of suicidal ideation, which are now on the rise after falling throughout the 1990's (Figure 5). Due to an increase in gun violence, there has also been a more recent increase in homicide among young people (Yablon & Ness, 2018). However, homicide differs from suicide in that it tends to be clustered in low-income urban areas, whereas suicide is more common in suburban and rural areas (Branas, Nance, Elliott, Richmond, & Schwab, 2004). In either case, however, it is noteworthy that the rise in suicide and homicide has departed from the more general and favorable decline in other indicators of ill-health among young people.

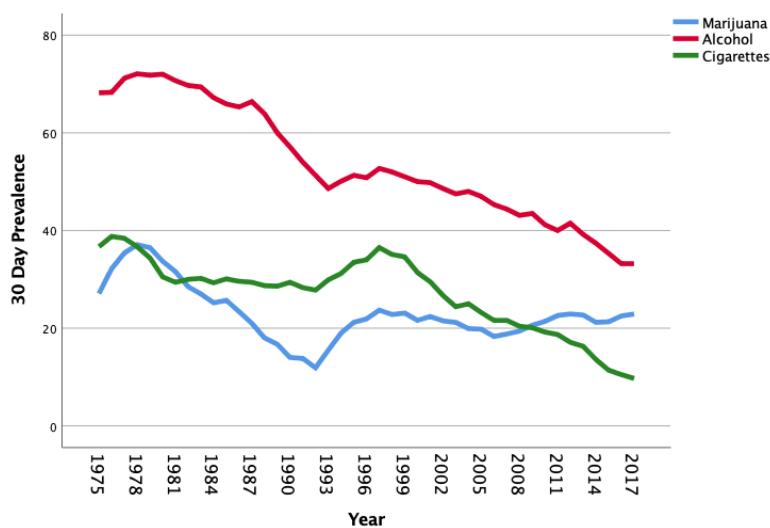
Twenge and colleagues (2018) have suggested that the increase in suicide and related outcomes in recent years reflects increasing social isolation and other adverse effects of online social networking. They found that depressive symptoms as reported in the Monitoring the Future Study and the YRBS were positively related to screen use, especially social media use. At the same time, engaging in sports and attending religious services were negatively related to those symptoms.



Source: Martin, Hamilton, Osterman, Driscoll, & Drake, 2018.

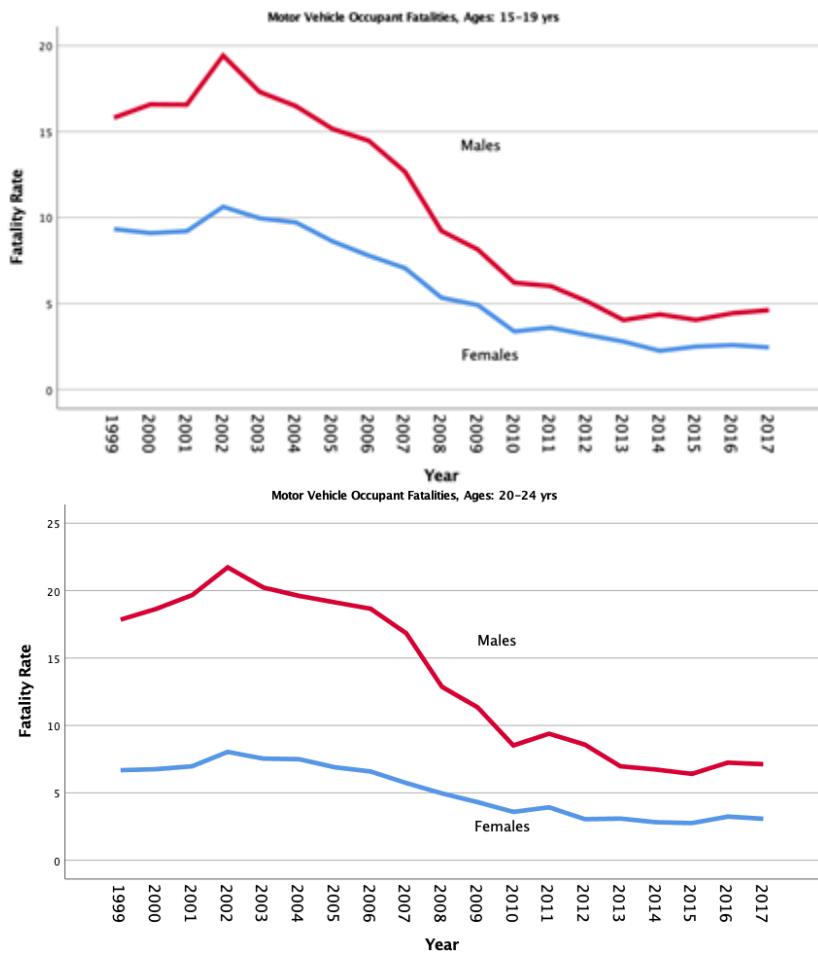
Note: Rates are plotted on a logarithmic scale.

Figure 1. Decline in birth rates in U. S. for 15-to-24 year olds since 1990.



Source: (Johnston et al., 2018).

Figure 2. Declines in use of drugs since 1970's among high school seniors.

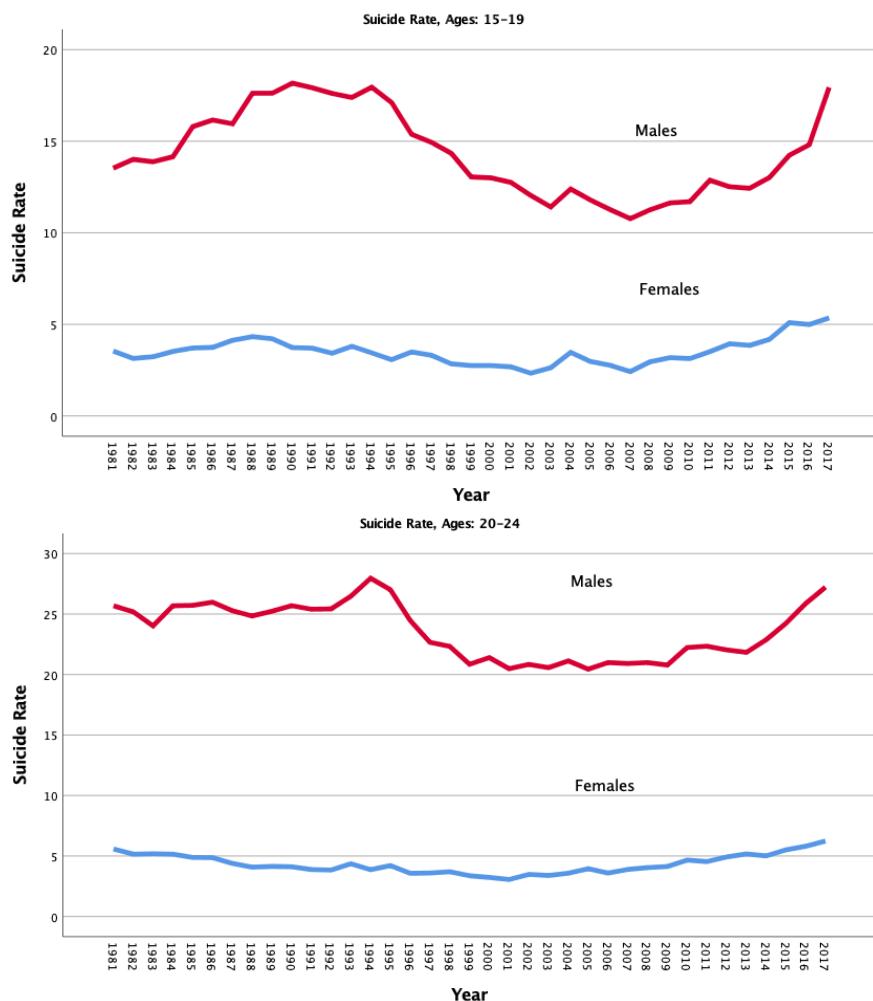


Source: CDC, 2019.

Figure 3. Declines in motor vehicle fatalities since 1999 for 15-19 and 20-24 year olds.

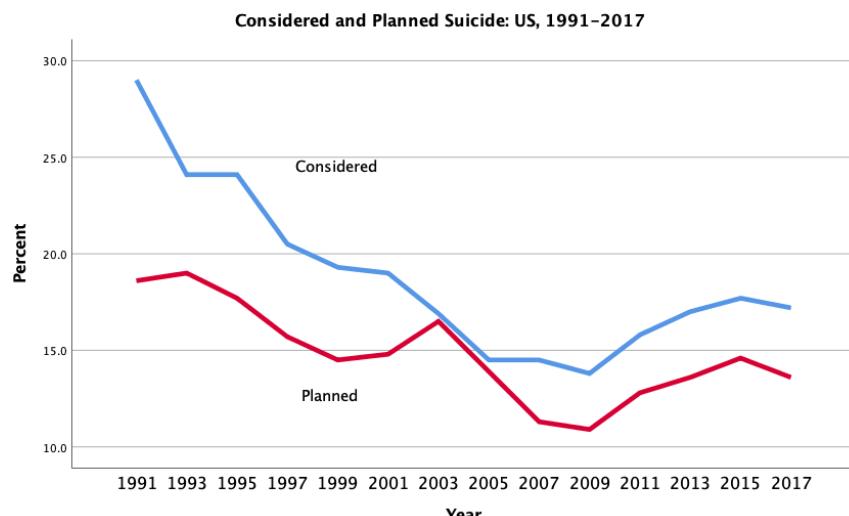
In this chapter, we evaluate this screen-dysphoria hypothesis in contrast to increasing stress placed on youth to succeed academically in combination with recent economic constraints brought on by the financial crisis of 2008. This interpretation is consistent with economic trends during the 1990's when the US economy was doing well. Consumer confidence was high and the economy grew at a strong pace. In keeping with an economic analysis, we see that suicide rates declined dramatically in young people ages 15 to 24 during the 1990's (Centers for Disease Control and Prevention, 2019).

This trend reversed abruptly with the financial crisis of 2008, when the rates went up again (see Figure 4).



Source: CDC, 2019.

Figure 4. Suicide rates among 15-19 and 20-24 year olds since 1981.



Source: CDC, Youth Risk Behavior Survey, 2018.

Figure 5. Trends in percentage of high school students reporting suicidal ideation since 1991.

SUICIDE AND THE ECONOMY

Evidence regarding economic trends and suicide is strong. A study of 63 countries from 2000 to 2011 found an aggregate relationship between unemployment trends and suicide across age groups (Nordt, Warnke, Selfritz, & Kawohl, 2015). The rise in suicide was pronounced following the 2008 financial crisis. Suicide differs from other types of death during recessions which appear to decline in aggregate with greater unemployment (Ariizumi & Schirle, 2012; Bilal et al., 2017), suggesting that the relationship between unemployment and mortality is complex. Nevertheless, a study in Sweden found that length of unemployment was associated with a rise in suicide at the individual level (Garcy & Vagero, 2012). Suicide rates are also tempered by the policy response to financial hardships, with less of an effect in countries that have stronger economic safety nets for their workers (Stuckler & Basu, 2013).

We examined U. S. suicide trends from 1990 to 2017 in two young age groups (15-19 and 20-24) in relation to various economic indicators, including rates of household poverty and income as well as unemployment. In support of an economic analysis, the trends in suicide were highly related to poverty and income in males, and less so in females (see Figure 6). However, in the last two years of available data (2016-2017), the suicide rates of young people diverged from the economic trend. Although the economy did well in those years, suicide rates increased, bucking the trend seen prior to 2016. As seen in Table 1, the economic trends in income and poverty aligned more closely for both males and females prior to 2016 but less so when including the last two years. Unemployment rates were less strongly related to suicide in these age groups.

SUICIDE AND INTERNET USE

Data on social media use in adults began to be collected starting in 2005 by the Pew Internet and Technology program. According to their surveys, young people ages 18-29 have been the strongest users of social media. Indeed, by 2008, about two-thirds of this age group was already using these media. By 2010, this grew to about 80% and has since plateaued at about 88% (<https://www.pewinternet.org/fact-sheet/social-media/>). It is likely that adolescents were even more heavily engaged in social media.

Given the powerful relation between suicide rates and household income/poverty rates from 1999 to 2015, the rise in social media use by young people is unlikely to have triggered the rise in suicide that started in 2009 and that has produced the gains that have persisted since that time. Furthermore, the rise in 2016-2017 that diverged from economic trends was no more likely to have coincided with social media use, which did not change dramatically at this time. The economic trends provide a strong alternative explanation for the rise in suicide since 2008, although the most recent rises in 2016-2017 defy easy explanation.

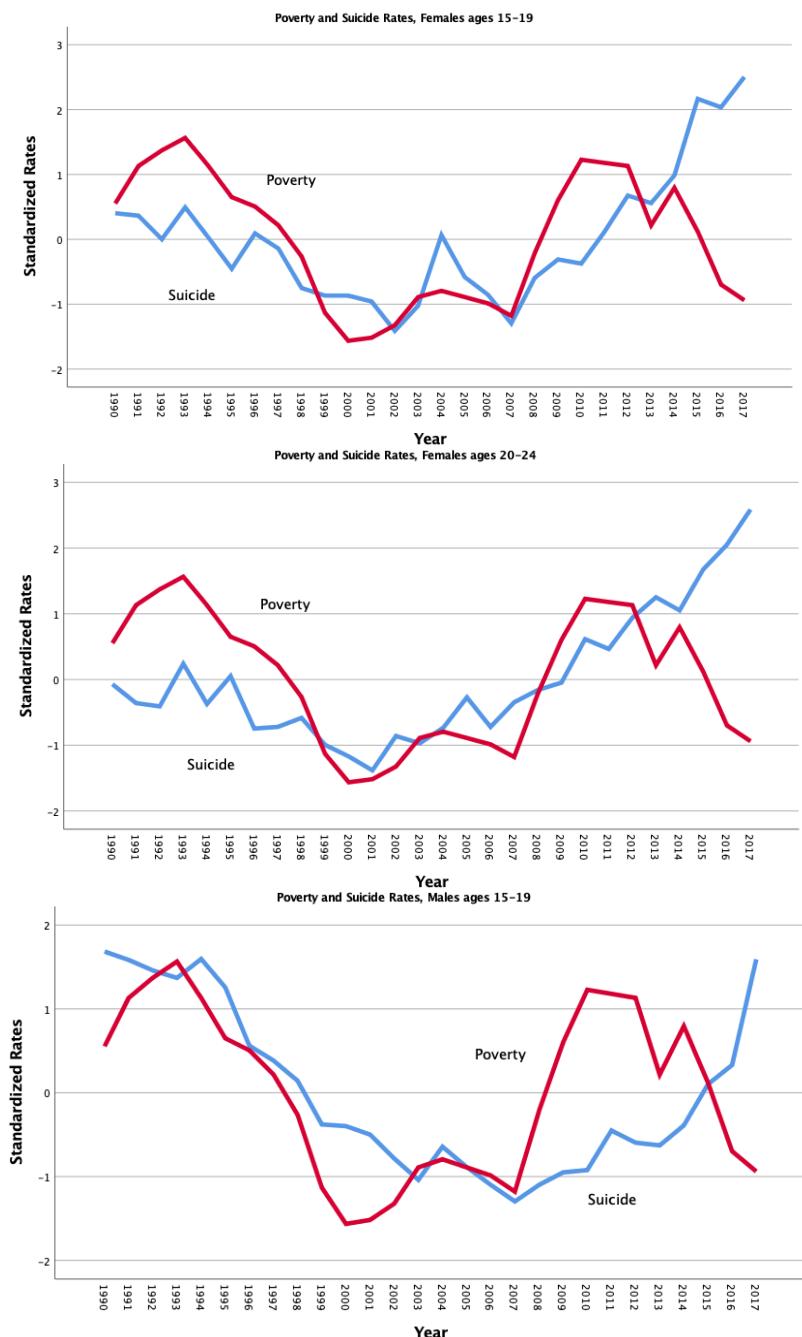
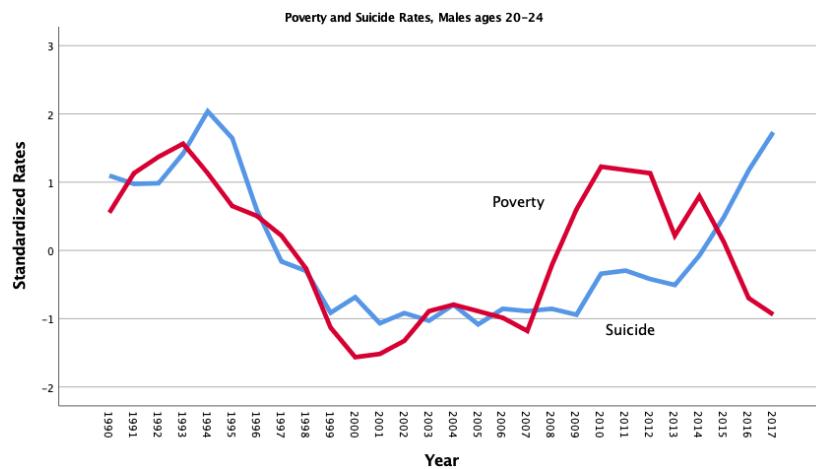


Figure 6. (Continued).



Source: Suicide rates are from CDC, 2019; Poverty rates are from US Census, 2019.

Figure 6. Suicide rates and household poverty rates from 1990 to 2017 for four gender by age groups. Note the divergence in years 2016-2017.

Table 1. Correlations between economic indicators and suicide rates, U. S., 1990-2017

Gender/ Age	Correlation from 1990-2017 (n = 28)			Correlation from 1990-2015 (n = 26)		
	Unemployment	Income	Poverty	Unemployment	Income	Poverty
Female						
15-19	.08	-.07	.32	.31	-.47	.63
20-24	.22	.04	.28	.53	-.34	.59
Male						
15-19	-.08	-.51	.47	.00	-.73	.58
20-24	.01	-.49	.53	.13	-.79	.70

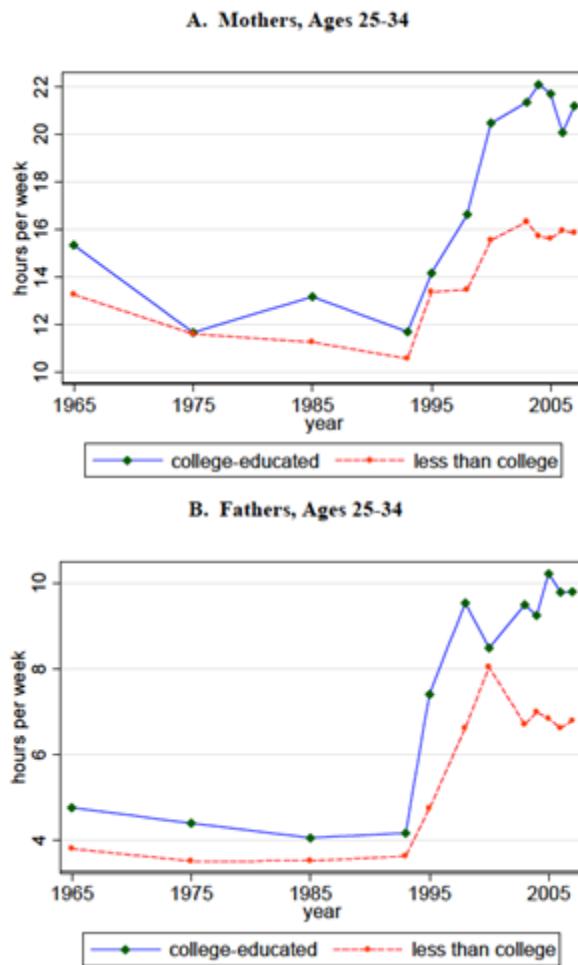
Note: Bolded entries are $p < .01$. Economic data are from the US Census.

WHAT ACCOUNTS FOR THE DECLINE IN MOST INDICATORS OF ADOLESCENT ILL-HEALTH BUT AN INCREASE IN SUICIDE?

A recent analysis by Doepke and Zilibotti (2019) helps to understand both the favorable and less favorable trends in adolescent health. They

examined parenting practices across the world in relation to economic and psychological forces. Building on Baumrind's (1978) model of parenting styles, they defined two dimensions of parenting: intensity and responsiveness. Authoritative and authoritarian parenting are high in intensity but differ in responsiveness, with authoritative parents more responsive to the needs of their children than authoritarian parents. An interesting feature of the model is the distinction between permissiveness and neglect. Permissiveness is responsive but less controlling than authoritative parenting, and neglect is low in both intensity and responsiveness. They find evidence that the US and other countries with high levels of competitiveness for education and job success have a surplus of intensive parenting, and especially authoritative parenting in middle-income households. Countries that have less competition for education and job success (e.g., the Scandinavian countries) tend to have parents with a more permissive style and happier adolescents. Greater concern about obtaining a college degree in the US has been a trend since at least the late 1990's, but it has escalated since the great recession of 2008. It is also related to a country's level of inequality, with high levels exacerbating stress on adolescents. Notably, Twenge et al. (2017) also reported a relationship between depression and economic inequality.

In line with Doepke and Zilibotti, changes in parenting have had large scale effects on children over the past 50 years. First, family sizes have declined since the 60's and 70's. In an analysis done by the Pew Research Center (2015), 40% of women ages 40 to 44 in 1976 had given birth to four or more children; while in 2014, the corresponding percentage was only 14. With fewer children per household, parents have been able to devote more time to each of their children, and this is likely to have reduced many indicators of ill-health in adolescents. An analysis of time spent caring for children indicates that rates of this behavior increased dramatically starting in the early 1990's (see Figure 7; Ramey & Ramey, 2010). This pattern was evident even for non-college educated parents, but it was stronger for those who had a college degree.



Source: Ramey & Ramey, 2010.

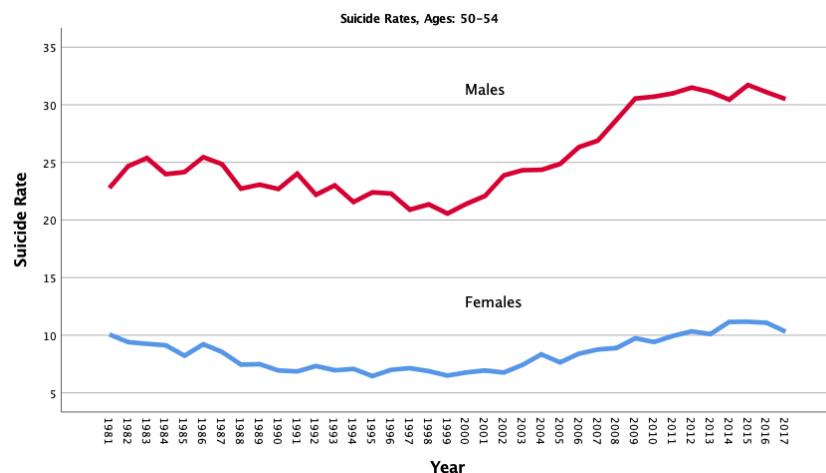
Figure 7. Time devoted to childcare since 1965 for mothers and fathers by college education.

But not all of the increased attention from parents may have been healthy. In particular, the increasing need for academic success, which also increased in the 1990's, may have had adverse effects on adolescents. More intensive parenting may have put additional stress on children to succeed academically, which could have led to increases in risk for suicide (see also, Mueller & Abrutyn, 2016).

In a recent study of young people ages 18-29, we found that students in this age group were particularly at risk for suicide compared to non-students (Arendt, Scherr, Pasek, Jamieson, & Romer, 2019). This is consistent with the hypothesis that economic pressures to obtain post-secondary education have placed increased stress on young people, especially those striving for such degrees.



Figure 8. (Continued).



Source: CDC, 2019.

Figure 8. Trends in suicide for adults ages 40-54.

Parents have also experienced greater stress since at least 2000 when the economic expansion of the 1990's ended. As seen in Figure 8, suicide rates in persons ages 40 to 54 have been on the upswing since about 1999, especially in those ages 45 to 54. These are the likely ages of parents of the young people now experiencing the suicide uptick. The recent scandal involving celebrities paying exorbitant fees to enroll their adolescents in college illustrates the extreme measures parents are willing to take in order to manage the academic success of their children.

What we are suggesting is that more intensive parenting has likely helped to reduce otherwise unhealthy behavior in adolescents, but at the same time has passed on the stress that results in increased suicidal ideation. As noted above, reports of suicidal ideation in adolescents declined during the prosperous 1990's but began to reverse since 2008. This reversal is more likely associated with the financial crisis than with anything to do with social networking.

DOES ONLINE SOCIAL NETWORKING LEAD TO DEPRESSION?

Evidence regarding the effects of social networking has been mixed. While it has reduced the need for face-to-face interaction, it has also likely kept youth off the road thereby helping to reduce driving fatalities (see Figure 3). But the 2008 economic crisis has likely added to the decline as well given the sharp drop in driver fatalities at this time. Nevertheless, for those adolescents who drive, the distraction produced by phones has likely halted the trend of declining driving injuries. It is noteworthy however that recent changes in motor vehicle fatalities have been far greater for middle-aged pedestrians than for youth (not shown in the figure).

Heavy use of online media may also be a result rather than a cause of depression. In our longitudinal study of media use by young people ages 14 to 22 (Romer, Bagdasarov, & More, 2013), we found that over a year's time, those who experienced an increase in depression tended to withdraw from social activity, such as sports and clubs, while also spending more time on the internet. A more recent study of early adolescents and college students in Canada (Heffer, Good, Daly, MacDonell, & Willoughby, 2019) also found that symptoms of depression predicted later use of social media in adolescent females and that greater participation in clubs or sports predicted less depression later in the study among the college students. These findings suggest that the correlation that Twenge et al. (2018) found between depression symptoms and time spent online was at least partly due to a response to depression rather than a cause.

We have also studied youth with symptoms of internet addiction and found that there is a tendency for such youth to report unhappy relations with parents, which may also lead to withdrawal (Bleakley, Ellithorpe, & Romer, 2016). Thus, associations between heavy online media use and depression may be the result of poor relationships with parents in some youth.

There is also evidence that the type of content that young people access online is important in determining its effects. For example, online engagement with educational and informational sources is beneficial for youth (Romer et al., 2013). Youth who do not use these resources for whatever reason are also less likely to do well in school, which may also lead to unhappiness. We have also found that the type of content that young people find online can affect their mental health. Those who frequent online chat sites in search of information and support regarding suicide were found to be at greater risk of subsequent suicidal ideation (Dunlop, More, & Romer, 2011). This was in contradiction to finding that exposure to suicide on social networks such as Facebook did not enhance subsequent suicidal ideation, perhaps because it also tended to be accompanied by supportive messages from friends.

A large study of online media use in the UK suggests that the association between heavy use and depression is small in magnitude (Orben & Przybylski, 2019b). In addition, three large scale studies by the same team found very small relations between screen use and depression (Orben & Przybylski, 2019a). This conforms to evidence that it is the purpose of media use that determines its effects by potentially displacing otherwise healthy and productive use of time rather than by being directly depressogenic.

In sum, the greater use of online media by today's youth has complex effects that must be considered in the context of the economic pressures that have increased competition among youth in the U. S. for post-secondary training. These pressures appear to have increased the intensity of parenting which has had both helpful and, in some cases, stressful effects on youth.

The recent increases in suicide in young people which depart from trends in both screen use and economic hardship will require further study to determine their likely sources. Whether these are just short-term departures from economic trends or evidence of other major influences will be answered in part by suicide rates in subsequent years.

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