Associations of Religious Upbringing With Subsequent Health and Well-Being From

Adolescence to Young Adulthood: An Outcome-Wide Analysis

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WEB APPENDIX

Outcome assessment

Life satisfaction. Life satisfaction over the past month was assessed with one item from the validated Rand Mental Health Inventory (1) (i.e., "Have you felt happy, satisfied or please with your personal life") (GUTS 2010). Response cries ranged from 1: none of the time to 6: all of the time. The response was considered as a continuous variable (mean=4.44, SD=1.02).

Positive affect. Positive affect over the past month was assessed with 10 items from the validated Rand Mental Health Inventory (1) (e.g., "Did you feel relaxed and free of tension") (GUTS 2010). Responses ranged from 1 (none of the time) to 6 (all of the time). An overall score was calculated by summing responses across all items ($\alpha = 0.94$), ranging from 10 to 60 (mean=39.99, SD=8.74).

Self-esteem. Self-esteem was measured with the validated Rosenberg Self-esteem Scale (2, 3) which assessed participants' positive and negative feelings towards oneself (e.g., "I am able to do things as well as most other people", "I certainly feel useless at times") (GUTS 2010). Response options ranged from 1 (strongly agree) to 4 (strongly disagree). Items were reverse coded as necessary such that a higher score reflected greater self-esteem. An overall score was created by summing responses across items ($\alpha = 0.91$, mean=33.71, SD=4.97, range = 10 to 40).

Emotional processing. The 4-item Emotional Processing Subscale from the validated Emotional Approach Coping Scale (4) was used to measure emotional processing (GUTS 2010). The subscale assessed the extent to which individuals seek to understand their emotions under stress (e.g., "I realize that my feelings are valid and important"). Response options ranged from 1 (not at all) to 4 (a lot). Items were summed to create an overall score with higher scores indicating greater emotional processing ($\alpha = 0.84$, mean=11.22, SD=2.76, range =4 to 16).

Emotional expression. The 4-item Emotional Expression Subscale from the validated

Emotional Approach Coping Scale (4) was used to assess emotional expression (GUTS 2010).

The subscale measured the extent to which participants seek to express their emotions in stressful

situations (e.g., "I feel free to express my emotions"). Response options ranged from 1 (not at

all) to 4 (a lot). Responses were summed across items to create an overall score, with higher

scores indicating greater emotional expression ($\alpha = 0.91$, mean=10.64, SD=3.02, range =4 to 16).

Character/virtue

Frequency of volunteering. One question was used to assess frequency of volunteer work:

"In an average month, how many hours do you spend on volunteer work, community service, or

helping people outside of your home without getting paid" (GUTS 2007). The response options

ranged from 1 (0 hour) to 4 (10 or more hours). The response was used as a continuous variable.

Sense of mission. Sense of mission was measured with a single item: "I have a sense of

mission or calling in my own life". Response ranged from 1 (strongly agree) to 4 (strongly

disagree) (GUTS 2007). The response was reverse coded so that higher scores reflected greater

sense of mission. The responses were used as a continuous variable.

Forgiveness of others. Participants were asked to report to what extent they forgave

others in response to the question: "Because of my spiritual or religious beliefs, I have forgiven

those who hurt me" (GUTS 2007). Response categories ranged from 1 (always or almost always)

to 4 (never). Responses were reverse coded so that higher scores reflected higher levels of

forgiveness of others. The response was used as a continuous variable.

Registered to vote. Participants were asked to report whether they were currently

registered to vote (yes, no) (GUTS 2007).

Number of physical health problems. Participants self-reported whether they had been told by a health care provider that they had the following conditions (yes, no) (GUTS 2010): cancer, diabetes, high cholesterol, high blood pressure and asthma. A summary score was created as the total number of reported conditions (mean=0.36, SD=0.59, range = 0 to 3).

Overweight or obese. The body mass index was calculated based on self-reported height (inches) and weight (pounds) (GUTS 2010). Overweight or obese was defined as BMI$\geq$ 25 kg/m^2 (5).

Depression. Depressive symptoms over the past week (GUTS 2010) was assessed with the validated Center for Epidemiologic Studies Depression Scale (CES-D) (e.g., "I felt depressed") (6). Response options ranged from 0 (rarely or none of the time) to 3 (all of the time). Items were reverse scored as necessary with higher scores indicating more depressive symptoms, and were summed to create an overall score ($\alpha = 0.81$, mean=7.25, SD=4.63, range =0 to 30). Participants also reported whether they have ever received a diagnosis of depression (GUTS 2013).

Anxiety. Nine items from the Worry/Sensitivity Subscale of the validated Revised Children's Manifest Anxiety Scale (RCMAS) were used to assess anxiety symptoms over the past week (e.g., "I worry a lot of the time") (GUTS 2010). Response options ranged from 0 (none of the time) to 5 (all of the time). Items were summed to create an overall score of anxiety symptoms (α=0.93, mean=22.30, SD=8.36, range=9 to 54). Participants also reported whether they have ever received a diagnosis of anxiety disorder.

Probable post-traumatic stress disorder (PTSD). The validated Breslau's 7-item short screening scale (7) was used to measure lifetime PTSD symptoms (GUTS 2007), in which symptoms of PTSD related to a most distressing event in their life were reported. A conservative

cutoff of 6 or more symptoms was used as the cutoff for probable PTSD, as the prevalence was high in this cohort using the traditional cutoff of 4 or more symptoms (7, 8).

Cigarette smoking. Cigarette smoking over the past year was queried (GUTS 2010): "In the past 12 months, have you smoked a cigarette" (yes, no).

Frequent binge drinking. A single question was used to assess binge drinking over the past year (GUTS 2010): "In the past 12 months, how many times did you drink 5 (male)/4 (female) or more alcoholic drinks over a few hours". Response categories ranged from 1 (never) to 10 (37 or more times). Participants who reported at least 12 episodes of binge drinking (7: 12 to 15 times to 10: 37 or more times) were considered as frequent binge drinkers (9).

Marijuana use. Lifetime marijuana use was queried with a single question (GUTS 2010): "Have you ever used marijuana" (yes/no).

Illicit drug use other than marijuana. Lifetime use of other illicit drugs including cocaine or crack, heroin, ecstasy, LSD/mushrooms or any other hallucinogen, crystal meth, or other amphetamines was also queried (GUTS 2010). Those who reported using any of the drugs were considered as having illicit drug use (yes, no).

Prescription drug misuse. Lifetime use of the following drugs without a doctor's prescription was queried: tranquilizers, pain killers, sleeping pills and stimulants (GUTS 2010). Those who reported use of any of the drugs were considered as having prescription drug use (yes, no).

Number of lifetime sexual partners. Lifetime history of sexual intercourse was queried (GUTS 2007), and the response options included "yes", "no" and "not sure". Those who reported "yes" or "not sure" further reported the number of their lifetime sexual partners: "During your life, with how many people have you had sexual intercourse". Response categories ranged from

1 (1 person) to 8 (21 or more people). Participants who reported never had sexual intercourse were coded as having 0 sexual partners. The response was used as a continuous variable (mean=3.11, SD=2.58, range=0 to 8).

Early sexual initiation. Participants who reported ever had sexual intercourse or "not sure" were further asked to report the age when they had sexual intercourse for the first time (GUTS 2007). Response options ranged from 1 (13 years or younger) to 9 (21 years or older). Participants who reported sexual initiation at year 15 years or younger were considered as having early sexual initiation (yes, no) (10).

Sexually transmitted infections (STIs). Participants were asked to report whether they ever received a diagnosis of chlamydia, HPV, genital warts or any STIs (GUTS 2013). Those who reported any of the conditions were considered as having STIs diagnosis (yes, no).

Teen pregnancy. Participants who reported ever been pregnant (for female) or ever impregnated a woman (for male) were further asked to recall the calendar year when their/their partner's first pregnancy ended (GUTS 2010). The age of pregnancy was calculated by subtracting the participant's/their partner's birth year from the year of pregnancy. Teen pregnancy was defined as pregnancy before the age of 20 (11).

Abnormal Pap test. Participants reported whether they ever had a Pap test (no, yes, not sure) (GUTS, 2007). Those who reported "yes" or "not sure" were asked to respond to a second question "Have you been told by a doctor or other health care provider that you had an abnormal Pap test". Response categories were "yes", "no" or "not sure". Those who reported "yes" were considered as having abnormal Pap test, whereas those who reported "no" were coded as not having abnormal Pap test.

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Web Table 1. Baseline characteristics of participants remained in the cohort and participants lost to follow-up in GUTS 2010 questionnaire wave, among participants who had valid data on religious service attendance or prayer/meditation at baseline (Growing Up Today Study 1999-2010 questionnaire wave).

	Followed (n=6,950)	Lost to follow-up (n=3,879)	P [a]
Religious service attendance			0.01
Never, %	14.97	17.15	
Less than once/week, %	27.21	26.69	
At least once/week, %	57.82	56.16	
Prayer or meditation			<0.001
Never, %	16.57	20.31	
Less than once/week, %	17.98	18.81	
1-6 times/week, %	28.00	27.38	
At least once/day, %	37.45	33.50	
Age, mean (SD)	14.81 (1.67)	14.61 (1.65)	<0.001
Boy, %	33.27	55.27	<0.001
White, %	93.31	93.35	0.93
Geographic region			<0.001
West, %	16.10	13.12	
Midwest, %	35.78	35.09	
South, %	14.26	14.79	
Northeast, %	33.86	37.00	
Mother's age, mean (SD)	44.25 (3.54)	43.92 (3.60)	<0.001
Mother's race (white), %	97.44	97.03	0.21
Mother married, %	92.56	91.67	0.10
Mother's subjective SES in the US, mean (SD)	7.21 (1.30)	7.02 (1.30)	<0.001
Mother's subjective SES in the community, mean (SD)	7.07 (1.55)	6.93 (1.56)	<0.001
Pretax household income			<0.001
<$50,000, %	12.22	14.67	
$50,000-$74,999, %	22.89	25.46	
$75,000-$99,999, %	21.95	23.68	
≥$100,000, %	42.93	36.19	
Census tract college education rate, mean (SD)	32.33% (16.43%)	29.97 (15.60)	<0.001

Census tract median income			<0.001
<$50,000, %	24.38	29.11	
$50,000-$74,999, %	47.78	46.09	
$75,000-$99,999, %	20.82	19.08	
≥$100,000, %	7.02	5.72	
Maternal depression, %	9.64	11.50	0.003
Maternal current smoking, %	6.21	8.83	<0.001
Prior depressive symptoms, mean (SD)	1.20 (0.57)	1.20 (0.60)	0.65
Prior overweight or obesity, %	18.72	21.70	<0.001
Prior cigarette smoking, %	16.70	18.42	0.02
Prior drinking, %	8.25	8.31	0.92
Prior marijuana use, %	11.72	13.12	0.03
Prior drug use other than marijuana, %	3.86	5.01	0.005
Prior prescription drug misuse, %	6.20	7.54	0.008
Prior number of lifetime sexual partners, mean (SD)	0.17 (0.70)	0.24 (0.88)	<0.001
Prior history of early sexual initiation, %	5.14	7.29	<0.001
Prior history of sexually transmitted infections, %	0.16	0.36	0.05
Prior history of teen pregnancy, %	0.30	0.67	0.007

SES, socioeconomic status.

[a] ANOVA or chi-square tests were used to examine the mean levels (standard deviation, SD) of the characteristic or proportion of individuals within each follow-up category with that characteristic.

Web Table 2A. Timing of assessment of all variables in this study (Growing Up Today Study, Nurses Health Study II)

Growing Up Today Study (offspring assessment)							
	1996	1998	1999	2005	2007	2010	2013
Exposures							
Religious service attendance			√				
Prayer or meditation			√				
Outcomes							
Life satisfaction						√	
Positive affect						√	
Self-esteem						√	
Emotional processing						√	
Emotional expression						√	
Registered to vote					√		
Frequency of volunteering					√		
Sense of mission					√		
Forgiveness of others					√		
Number of physical health problems						√	
Overweight/obesity						√	
Depressive symptoms (past week)						√	
Anxiety symptoms (past week)						√	
Anxiety diagnosis (lifetime)							√
Depression diagnosis (lifetime)							√
Probable posttraumatic stress disorder (lifetime)					√		
Cigarettes smoking (past year)						√	
Binge drinking (past year)						√	
Marijuana use (lifetime)						√	
Other illicit drug use (lifetime)						√	
Prescription drug misuse (lifetime)						√	
Number of lifetime sexual partners					√		
Early sexual initiation					√		
History of sexually transmitted infections (lifetime)							√
Teen pregnancy						√	
Abnormal Pap test					√		
Covariates							
Age			√				
Sex	√						
Race	√						
Geographic region	√						
Prior depressive symptoms			√				
Prior weight status		√					

Prior smoking		√						
Prior drinking		√						
Prior marijuana use			√					
Prior drug use other than marijuana			√					
Prior prescription drug misuse			√					
Prior number of sexual partners			√					
Prior history of early sexual imitation			√					
Prior history of sexually transmitted infections			√					
Prior history of teen pregnancy			√					
Adulthood religious service attendance (used only in a sensitivity analysis)				√				
Retrospectively reported childhood sexual abuse (used only in a sensitivity analysis)					√			

Nurses Health Study II (maternal assessment)				
	1989	1997	1999	2001
Age			√	
Race	√			
Marital status		√		
Subjective socioeconomic status				√
Household income				√
Census tract median income				√
Census tract college education rate				√
Maternal probable depression		√		
Maternal current smoking		√		

Web Table 2B. Sensitivity analysis adjusting for retrospectively reported childhood sexual abuse measured in 2007, not included in the main analyses because the covariate was measured concurrently with outcomes - Religious service attendance in adolescence and health and well-being in young adulthood [a] (Growing Up Today Study 1999 to 2007, 2010 or 2013 questionnaire wave, N ranged from 5,339 to 7,436 [b])

Health and well-being outcomes	Religious Service Attendance							
	Less than once/week vs. Never				At least once/week vs. Never			
	RR[c]	β[d]	95% CI	P-value Threshold	RR[c]	β[d]	95% CI	P-value threshold
Psychological Well-being								
Life satisfaction		0.02	-0.06, 0.11			0.16	0.09, 0.24	<0.0019[e]
Positive affect		0.09	0.01, 0.17	<0.05		0.18	0.10, 0.25	<0.0019[e]
Self-esteem		0.02	-0.06, 0.10			0.06	-0.02, 0.13	
Emotional processing		0.04	-0.05, 0.12			0.03	-0.06, 0.11	
Emotional expression		0.03	-0.06, 0.11			0.03	-0.05, 0.11	
Character and Virtue								
Frequency of volunteering		0.13	0.06, 0.21	<0.0019[e]		0.28	0.21, 0.35	<0.0019[e]
Sense of mission		0.11	0.03, 0.19	<0.01		0.27	0.20, 0.35	<0.0019[e]
Forgiveness of others		0.33	0.25, 0.42	<0.0019[e]		0.70	0.62, 0.78	<0.0019[e]
Registered to vote	1.04		1.01, 1.06	<0.01	1.03		1.01, 1.06	<0.05
Physical Health								
Number of physical health problems		0.09	0.01, 0.17	<0.05		0.00	-0.07, 0.08	
Overweight/obesity	0.96		0.87, 1.06		1.00		0.91, 1.09	
Mental Health								
Depressive symptoms		-0.01	-0.09, 0.08			-0.11	-0.19, -0.04	<0.01
Depression diagnosis	0.91		0.77, 1.07		0.87		0.74, 1.03	
Anxiety symptoms		0.03	-0.05, 0.11			-0.04	-0.11, 0.04	
Anxiety diagnosis	1.00		0.82, 1.22		0.88		0.73, 1.07	
Probable PTSD	0.87		0.67, 1.14		0.72		0.56, 0.93	<0.05
Health Behaviors								
Cigarette smoking	0.99		0.88, 1.12		0.86		0.76, 0.97	<0.01
Frequent binge drinking	1.03		0.92, 1.15		0.94		0.84, 1.05	
Marijuana use	0.99		0.94, 1.05		0.83		0.78, 0.88	<0.0019[e]

	RR	β	CI	RR	β	CI	P
Any other illicit drug use	0.92		0.75, 1.14	0.63		0.52, 0.78	<0.0019[e]
Prescription drug misuse	1.03		0.90, 1.17	0.83		0.73, 0.95	<0.01
Number of lifetime sexual partners		-0.02	-0.09, 0.05		-0.27	-0.33, -0.21	<0.0019[e]
Early sexual initiation	0.91		0.78, 1.06	0.66		0.56, 0.77	<0.0019[e]
History of STIs	0.98		0.80, 1.20	0.79		0.65, 0.96	<0.05
Teen pregnancy	0.88		0.50, 1.56	0.77		0.44, 1.34	
Abnormal Pap test	0.88		0.76, 1.02	0.83		0.71, 0.96	<0.05

Abbreviations: RR, risk ratio; CI, confidence interval; PTSD, posttraumatic stress disorder; STIs, sexually transmitted infections.

[a] Participants' childhood sexual abuse was retrospectively reported at questionnaire wave 2007. Childhood sexual abuse was measured with two questions: "When you were a child (before age 11) were you touched in a sexual way by an adult or older child or were you forced to touch an adult or an older child in a sexual way when you did not want to" and "When you were a child (before age 11) did an adult or an older child force you or attempt to force you into any sexual activity by threatening you, holding you down or hurting you in some way when you did not want to". Response options included "no, this did not happen when I was a child", "Yes, this happened once" and "Yes, this happened more than once". Participants who reported "Yes, this happened once" or "Yes, this happened more than once" to at least one of the two questions were considered having experienced childhood sexual abuse (yes, no). The prevalence of childhood sexual abuse was 6.5% in this sample.

[b] The full analytic sample was restricted to those who had valid data on religious service attendance and childhood sexual abuse. The actual sample size for each analysis varies depending on the number of missing values on each outcome under investigation. Missing data on other covariates were imputed from previous questionnaire years; if no such data were available, missing were imputed with the mean values (continuous variables) or values of the largest category (categorical variables) of the non-missing data. All models controlled for participants' age, race, sex, geographic region, their mother's age, race, marital status, socioeconomic status (subjective socioeconomic status, household income, census tract college education rate, and census tract median income), maternal depression, maternal smoking, participants' prior health status or prior health behaviors (prior depressive symptoms, overweight/obesity, smoking, drinking, marijuana use, other drug use, prescription drug misuse, number of sexual partners, early sexual initiation, history of sexually transmitted infections, history of teen pregnancy), and participants' childhood sexual abuse.

[c] The effect estimates for the outcomes of probable PTSD, any other illicit drug use and teen pregnancy were odds ratio (these outcomes were rare [prevalence<10%], so the odds ratio would approximate RR). The effect estimates for other dichotomized outcomes were RR.

[d] All continuous outcomes were standardized (mean=0, standard deviation=1), and β was the standardized effect size.

[e] P <0.05 after Bonferroni correction (the p value cutoff for Bonferroni correction=0.05/26 outcomes=0.0019).

Web Table 2C. Sensitivity analysis adjusting for retrospectively reported childhood sexual abuse measured in 2007, not included in the main analyses because the covariate was measured concurrently with outcomes - Prayer or meditation in adolescence and health and well-being in young adulthood, adjusting for childhood sexual abuse [a] (Growing Up Today Study 1999 to 2007, 2010 or 2013 questionnaire wave, N ranged from 5,335 to 7,426 [b])

	Prayer or meditation											
	Less than once/week vs. Never				1-6 times/week vs. Never				Once/day or more vs. Never			
Health and well-being outcomes	RR[c]	β[d]	95% CI	P-value threshold	RR[c]	β[d]	95% CI	P-value threshold	RR[c]	β[d]	95% CI	P-value threshold
Psychological Well-being												
Life satisfaction		0.06	-0.03, 0.14			0.09	0.01, 0.17	<0.05		0.11	0.03, 0.19	<0.05
Positive affect		0.08	-0.01, 0.16			0.12	0.04, 0.19	<0.01		0.15	0.07, 0.22	<0.0019e
Self-esteem		0.01	-0.08, 0.09			0.10	0.02, 0.18	<0.05		0.07	-0.01, 0.15	
Emotional processing		0.04	-0.05, 0.13			0.10	0.02, 0.18	<0.05		0.15	0.07, 0.23	<0.0019e
Emotional expression		0.08	0.00, 0.17	<0.05		0.13	0.05, 0.21	<0.0019e		0.14	0.06, 0.22	<0.0019e
Character and Virtue												
Frequency of volunteering		0.14	0.07, 0.22	<0.0019e		0.27	0.20, 0.34	<0.0019e		0.35	0.28, 0.42	<0.0019e
Sense of mission		0.14	0.06, 0.22	<0.0019e		0.21	0.14, 0.29	<0.0019e		0.44	0.36, 0.51	<0.0019e
Forgiveness of others		0.38	0.29, 0.47	<0.0019e		0.61	0.53, 0.69	<0.0019e		0.84	0.76, 0.92	<0.0019e
Registered to vote	1.01		0.99, 1.04		1.01		0.98, 1.04		1.03		1.00, 1.05	<0.05
Physical Health												
Number of physical health problems		0.10	0.01, 0.19	<0.05		0.01	-0.06, 0.09			0.07	-0.01, 0.15	
Overweight/obesity	0.99		0.89, 1.10		0.98		0.89, 1.09		0.97		0.88, 1.07	
Mental Health												
Depressive symptoms		-0.08	-0.17, 0.00			-0.16	-0.24, -0.08	<0.0019e		-0.10	-0.18, -0.02	<0.05
Depression diagnosis	0.91		0.75, 1.09		0.95		0.80, 1.12		0.89		0.75, 1.05	
Anxiety symptoms		0.02	-0.07, 0.10			-0.01	-0.09, 0.06			0.03	-0.05, 0.11	
Anxiety diagnosis	1.00		0.80 ,1.24		1.02		0.83, 1.25		0.97		0.79, 1.19	
Probable PTSD	0.71		0.52, 0.96	<0.05	0.93		0.72, 1.22		0.93		0.72, 1.21	
Health Behaviors												
Cigarette smoking	0.99		0.87, 1.13		0.97		0.86, 1.10		0.87		0.76, 0.99	<0.05

	Est	CI	P	Est	CI	P	Est	CI	P
Frequent binge drinking	0.95	0.85, 1.07		0.98	0.89, 1.10		0.87	0.78, 0.97	<0.05
Marijuana use	0.98	0.93, 1.05		0.91	0.86, 0.97	<0.01	0.74	0.69, 0.79	<0.0019[e]
Any other illicit drug use	0.90	0.72, 1.12		0.75	0.61, 0.92	<0.01	0.54	0.44, 0.67	<0.0019[e]
Prescription drug misuse	0.90	0.79, 1.04		0.89	0.78, 1.01		0.72	0.63, 0.82	<0.0019[e]
Number of lifetime sexual partners	-0.05	-0.12, 0.03		-0.13	-0.20, -0.06	<0.0019[e]	-0.40	-0.46, -0.33	<0.0019[e]
Early sexual initiation	1.06	0.90, 1.25		0.85	0.71, 1.01		0.71	0.59, 0.85	<0.0019[e]
History of STIs	0.91	0.74, 1.12		0.84	0.69, 1.02		0.64	0.53, 0.79	<0.0019[e]
Teen pregnancy	0.87	0.48, 1.57		0.59	0.31, 1.11		0.84	0.48, 1.45	
Abnormal Pap test	0.82	0.70, 0.98	<0.05	0.95	0.81, 1.11		0.75	0.63, 0.88	<0.0019[e]

Abbreviations: RR, risk ratio; CI, confidence interval; PTSD, posttraumatic stress disorder; STIs, sexually transmitted infections.

[a] Participants' childhood sexual abuse was retrospectively reported at questionnaire wave 2007. Childhood sexual abuse was measured with two questions: "When you were a child (before age 11) were you touched in a sexual way by an adult or older child or were you forced to touch an adult or an older child in a sexual way when you did not want to" and "When you were a child (before age 11) did an adult or an older child force you or attempt to force you into any sexual activity by threatening you, holding you down or hurting you in some way when you did not want to". Response options included "no, this did not happen when I was a child", "Yes, this happened once" and "Yes, this happened more than once". Participants who reported "Yes, this happened once" or "Yes, this happened more than once" to at least one of the two questions were considered having experienced childhood sexual abuse (yes, no). The prevalence of childhood sexual abuse was 6.5% in this sample.

[b] The full analytic sample was restricted to those who had valid data on prayer/meditation and childhood sexual abuse. The actual sample size for each analysis varies depending on the number of missing values on each outcome under investigation. Missing data on other covariates were imputed from previous questionnaire years; if no such data were available, missing were imputed with the mean values (continuous variables) or values of the largest category (categorical variables) of the non-missing data. All models controlled for participants' age, race, sex, geographic region, their mother's age, race, marital status, socioeconomic status (subjective socioeconomic status, household income, census tract college education rate, and census tract median income), maternal depression, maternal smoking, participants' prior health status or prior health behaviors (prior depressive symptoms, overweight/obesity, smoking, drinking, marijuana use, other drug use, prescription drug misuse, number of sexual partners, early sexual initiation, history of sexually transmitted infections, history of teen pregnancy), and participants' childhood sexual abuse.

[c] The effect estimates for the outcomes of probable PTSD, any other illicit drug use and teen pregnancy were odds ratio (these outcomes were rare [prevalence<10%], so the odds ratio would approximate RR). The effect estimates for other dichotomized outcomes were RR.

[d] All continuous outcomes were standardized (mean=0, standard deviation=1), and β was the standardized effect size.

[e] $P < 0.05$ after Bonferroni correction (the p value cutoff for Bonferroni correction=0.05/26 outcomes=0.0019).

Web Table 3. Assessment of all outcome variables in this study (Growing Up Today Study)

Outcome variable	Questionnaire wave (GUTS)	Measurement	Response range or categories
Life satisfaction	2010	One item from the Rand Mental Health Inventory "Have you felt happy, satisfied or please with your personal life"	Range: 1 (none of the time) to 6 (all of the time)
Positive affect	2010	Ten items from the Rand Mental Health Inventory	Range: 10 to 60
Self-esteem	2010	Rosenberg Self-esteem Scale	Range: 10 to 60
Emotional processing	2010	Emotional processing subscale from the Emotional Approach Coping Scale	Range: 4 to 16
Emotional expression	2010	Emotional expression subscale from the Emotional Approach Coping Scale	Range: 4 to 16
Frequency of volunteering	2010	One item "In an average month, how many hours do you spend on volunteer work, community service, or helping people outside of your home without getting paid"	Range: 1 (0 hour) to 4 (10 or more hours)
Sense of mission	2007	One item "I have a sense of mission or calling in my own life"	Range: 1 (strongly agree) to 4 (strongly disagree)
Forgiveness of others	2007	One item "Because of my spiritual or religious beliefs, I have forgiven those who hurt me"	Range: 1 (always or almost always) to 4 (never)
Registered to vote	2007	One item: "Are you currently registered to vote"	Yes, no

Number of physical health problems	2010	Total number of the following conditions reported: had ever been told by a health care provider that they had cancer, diabetes, high cholesterol, high blood pressure or asthma	Ranged: 0 to 4
Overweight/obesity	2010	BMI≥25 as kg/m2 as overweight or obese	Yes, no
Depressive symptoms	2010	Center for Epidemiologic Studies Depression Scale	Ranged: 10 to 30
Depression diagnosis	2013	Ever been told by a healthcare provider that they had depression	Yes, no
Anxiety symptoms	2010	9 items from the Worry/Sensitivity Subscale of the Revised Children's Manifest Anxiety Scale	9 to 54
Anxiety diagnosis	2013	Ever been told by a healthcare provider they had anxiety	Yes, no
Probable posttraumatic stress disorder	2007	A 7-item short screening scale, with 6 or more symptoms as the cutoff to define probable PTSD	Yes, no
Cigarettes smoking	2010	One item: "In the past 12 months, have you smoked a cigarette"	Yes, no
Frequent binge drinking	2010	One item: "In the past 12 months, how many times did you drink 5 (for male)/4(for female) or more alcoholic drinks over a few hours", with at least 12 episodes of binge drinking as the cutoff to define frequent binge drinking	Yes, no
Marijuana use	2010	One item: "Have you ever used marijuana".	Yes, no
Other illicit drug use	2010	Participants were asked to report whether they ever used the following drugs: cocaine or crack, heroin, ecstasy, LSD/mushrooms or any other hallucinogen, crystal meth, or other amphetamines. Those who reported use of any of the drugs were considered as having other illicit drug use.	Yes, no

Non-medical prescription drug use	2010	Participants were asked to report whether they ever used the following drugs without a doctor's prescription: tranquilizers, pain killers, sleeping pills and stimulants. Those who reported use of any of the drugs were considered as having non-medical prescription drug use.	Yes, no
Number of lifetime sexual partners	2007	Participants were asked to report whether they ever had sexual intercourse (yes, no, not sure). Those who answered "yes" or "not sure" were further asked to report the number of their lifetime sexual partners: "During your life, with how many people have you had sexual intercourse".	Range: 0 (0 person) to 8 (21 or more people)
Early sexual initiation	2007	Age of sexual initiation was assessed with one item "How old were you when you had sexual intercourse for the first time". Age 15 years or younger was considered as early initiation	Yes, no
History of sexually transmitted infections	2013	Participants reported whether they had been told by a health care provider that they had chlamydia, HPV, genital warts or any STIs. Those who reported any of the conditions were considered as having STIs diagnosis	Yes, no
Teen pregnancy	2010	Participants who were ever pregnant (for female) or ever impregnated a woman (for male) reported the calendar year in which their/their partner's first pregnancy ended. The age of first pregnancy was calculated by subtracting their/their partner's birth year from the year of their first pregnancy.	Yes, no

		Pregnancy before age 20 was considered as teen pregnancy.	
Abnormal Pap test	2007	Participants reported whether they ever had a Pap test (no, yes, not sure). Those who reported "yes" or "not sure" were prompted to respond to a second question "Have you been told by a doctor or other health care provider that you had an abnormal Pap test" (yes, no, not sure). Those who reported "yes" were considered as having abnormal Pap test, whereas those who reported "no" were considered as not having abnormal Pap test	Yes, no

GUTS, the Growing Up Today Study.

Web Table 4. Distribution of participant characteristics in the full analytic sample for analyses on religious service attendance (Growing Up Today Study, N=10,813)

	Questionnaire wave (GUTS)	Mean (SD) or %
Sociodemographic factors (covariates)		
Age, in years (range: 12-19)	1999	14.74 (1.66)
Boy, %	1999	41.12
White, %	1999	93.33
Geographic region	1999	
West, %		15.03
Midwest, %		35.54
South, %		14.44
Northeast, %		35.00
Mother's age, in years (range: 35-54)	1999	44.13 (3.57)
Mother's race (White), %	1999	97.30
Mother's marital status (married), %	1997	92.23
Mother's subjective socioeconomic status in the US, (range: 1-10)	2001	7.14 (1.30)
Mother's subjective socioeconomic status in the community, (range: 1-10)	2001	7.02 (1.55)
Pretax household income	2001	
<$50,000, %		13.08
$50,000-$74,999, %		23.82
$75,000-$99,999, %		22.54
≥$100,000, %		40.57
Census tract college education rate, (range: 0%-85%)	2001	31.49% (16.18%)
Census tract median income	2001	
<$50,000, %		26.07
$50,000-$74,999, %		47.18
$75,000-$99,999, %		20.19
≥$100,000, %		6.56
Religious service attendance (exposure)	1999	

Never, %		15.05
Less than once/week, %		27.18
At least once/week, %		57.77

Psychological well-being (outcomes)

Life satisfaction, (range: 1-6)	2010	4.44 (1.02)
Positive affect, (range: 10-60)	2010	39.99 (8.74)
Self-esteem, (range: 10-40)	2010	33.71 (4.97)
Emotional processing, (range: 4-16)	2010	11.22 (2.76)
Emotional expression, (range: 4-16)	2010	10.64 (3.02)

Character and virtue (outcomes)

Frequency of volunteering, (range: 1: 0 hour/month - 4: 10 or more hours/month)	2007	1.83 (0.87)
Sense of mission, (range: 1-4)	2007	3.06 (0.73)
Forgiveness of others, (range: 1-4)	2007	2.93 (0.86)
Registered to vote, %	2007	89.68

Physical health (outcomes)

Number of physical health problems, (range: 0-4)	2010	0.36 (0.59)
Overweight/obesity, %	2010	36.67

Mental health (outcomes)

Depressive symptoms over the past week, (range: 0-30)	2010	7.25 (4.63)
History of depression diagnosis, %	2013	17.45
Anxiety symptoms over the past week, (range: 9-54)	2010	22.30 (8.36)
History of anxiety diagnosis , %	2013	14.16
Probable posttraumatic stress disorder, %	2007	7.70

Health behaviors (outcomes)

Ever cigarette smoking over the past 12 months, %	2010	24.62
Frequent binge drinking over the past 12 months, %	2010	30.56
Marijuana use (lifetime), %	2010	54.49
Other illegal drug use (lifetime), %	2010	22.15
Prescription drug misuse (lifetime), %	2010	23.27

Number of lifetime sexual partners, (range: 0-8)	2007	3.11 (2.58)
Early sexual initiation, %	2007	10.73
History of sexually transmitted infections, %	2013	12.80
Teen pregnancy, %	2010	2.14
Lifetime history of abnormal Pap test (among females), %	2007	24.78
Maternal health (covariates)		
Maternal probable depression over the past 4 weeks, %	1997	10.31
Maternal current smoking, %	1997	7.14
Prior health status or health behaviors (covariates)		
Prior depressive symptoms over the past year, (range: 0-4)	1999	1.20 (0.58)
Prior overweight or obesity , %	1998	19.76
Prior cigarette smoking (past 12 months), %	1999	17.30
Prior drinking (past 12 months), %	1998	8.27
Prior marijuana use (lifetime), %	1999	12.20
Prior drug use other than marijuana (lifetime), %	1999	4.27
Prior prescription drug misuse (lifetime), %	1999	6.68
Prior number of lifetime sexual partners, (range: 0-6)	1999	0.19 (0.77)
Prior history of early sexual initiation, %	1999	5.89
Prior history of sexually transmitted infections, %	1999	0.23
Prior history of teen pregnancy, %	1999	0.43
Childhood sexual abuse (covariate, for sensitivity analysis), %	2007	6.50

Web Table 5. Distribution of participant characteristics in the full analytic sample for analyses on prayer or meditation (Growing Up Today Study, N=10,789)

	Questionnaire wave (GUTS)	Mean (SD) or %
Sociodemographic factors (covariates)		
Age, in years (range: 12-19)	1999	14.74 (1.66)
Boy, %	1999	41.09
White, %	1999	93.33
Geographic region	1999	
West, %		15.03
Midwest, %		35.51
South, %		14.46
Northeast, %		35.00
Mother's age, in years (range: 35-54)	1999	44.13 (3.56)
Mother's race (White), %	1999	97.29
Mother's marital status (married), %	1997	92.25
Mother's subjective socioeconomic status in the US, (range: 1-10)	2001	7.14 (1.30)
Mother's subjective socioeconomic status in the community, (range: 1-10)	2001	7.02 (1.55)
Pretax household income	2001	
<$50,000, %		13.10
$50,000-$74,999, %		23.80
$75,000-$99,999, %		22.61
≥$100,000, %		40.49
Census tract college education rate, (range: 0%-85%)	2001	31.50% (16.19%)
Census tract median income	2001	
<$50,000, %		26.07
$50,000-$74,999, %		47.15
$75,000-$99,999, %		20.21
≥$100,000, %		6.57
Frequency of prayer or meditation (exposure)	1999	

Never, %		17.91
Less than once/week, %		18.28
1-6 times/week, %		27.78
At least once/day, %		36.04
Psychological well-being (outcomes)		
Life satisfaction, (range: 1-6)	2010	4.43 (1.02)
Positive affect, (range: 10-60)	2010	39.97 (8.74)
Self-esteem, (range: 10-40)	2010	33.70 (4.97)
Emotional processing, (range: 4-16)	2010	11.22 (2.76)
Emotional expression, (range: 4-16)	2010	10.63 (3.02)
Character and virtue (outcomes)		
Frequency of volunteering, (range: 1: 0 hour/month - 4: 10 or more hours/month)	2007	1.83 (0.87)
Sense of mission, (range: 1-4)	2007	3.06 (0.73)
Forgiveness of others, (range: 1-4)	2007	2.94 (0.86)
Registered to vote, %	2007	89.66
Physical health (outcomes)		
Number of physical health problems, (range: 0-4)	2010	0.36 (0.59)
Overweight/obesity, %	2010	36.61
Mental health (outcomes)		
Depressive symptoms over the past week, (range: 0-30)	2010	7.25 (4.63)
History of depression diagnosis, %	2013	17.42
Anxiety symptoms over the past week, (range: 9-54)	2010	22.31 (8.36)
History of anxiety diagnosis , %	2013	14.16
Probable posttraumatic stress disorder , %	2007	7.70
Health behaviors (outcomes)		
Ever cigarette smoking over the past 12 months, %	2010	24.65
Frequent binge drinking over the past 12 months, %	2010	30.58
Marijuana use (lifetime), %	2010	54.53
Other illegal drug use (lifetime), %	2010	22.19

Prescription drug misuse (lifetime), %	2010	23.32
Number of lifetime sexual partners, (range: 0-8)	2007	3.11 (2.59)
Early sexual initiation, %	2007	10.76
History of sexually transmitted infections, %	2013	12.78
Teen pregnancy, %	2010	2.14
Lifetime history of abnormal Pap test (among females), %	2007	24.84
Maternal health (covariates)		
Maternal probable depression over the past 4 weeks, %	1997	10.27
Maternal current smoking, %	1997	7.14
Prior health status or health behaviors (covariates)		
Prior depressive symptoms over the past year, (range: 0-4)	1999	1.20 (0.58)
Prior overweight or obesity , %	1998	19.78
Prior cigarette smoking (past 12 months), %	1999	17.34
Prior drinking (past 12 months), %	1998	8.29
Prior marijuana use (lifetime), %	1999	12.26
Prior drug use other than marijuana (lifetime), %	1999	4.28
Prior prescription drug misuse (lifetime), %	1999	6.68
Prior number of lifetime sexual partners, (range: 0-6)	1999	0.19 (0.77)
Prior history of early sexual initiation, %	1999	5.92
Prior history of sexually transmitted infections, %	1999	0.23
Prior history of teen pregnancy, %	1999	0.43
Childhood sexual abuse (covariate, for sensitivity analysis), %	2007	6.49
Adulthood religious service attendance (covariate, for sensitivity analysis)	2005	
Never, %		39.86
Less than once/week, %		35.61
At least once/week, %		24.52

Web Table 6. Distribution of participant characteristics by frequency of prayer or meditation at study baseline (Growing Up Today Study 1999 questionnaire wave, N=10,789)

	Prayer or meditation [a]				
	Never (n=1,932)	< Once/week (n=1,972)	1-6 times/week (n=2,997)	At least once/day (n=3,888)	*P*
Sociodemographic factors					
Age (range: 12-19), mean (SD)	14.93 (1.67)	14.87 (1.68)	14.70 (1.67)	14.61 (1.64)	<0.001
Boy, %	52.74	39.40	40.84	36.34	<0.001
White, %	91.90	93.49	93.78	93.60	0.05
Geographic region					<0.001
West, %	23.86	13.10	12.22	13.80	
Midwest, %	27.07	34.31	37.66	38.65	
South, %	8.71	11.88	15.33	17.95	
Northeast, %	40.35	40.71	34.79	29.61	
Mother's age (range: 35-54), mean (SD)	44.93 (3.59)	44.36 (3.50)	43.93 (3.51)	43.78 (3.55)	<0.001
Mother's race (white), %	96.32	97.31	97.59	97.53	0.03
Mother married, %	88.98	90.62	92.59	94.44	<0.001
Mother's subjective SES in the US (range: 1-10), mean (SD)	7.21 (1.33)	7.09 (1.31)	7.11 (1.27)	7.15 (1.30)	0.02
Mother's subjective SES in the community (range: 1-10), mean (SD)	6.97 (1.61)	6.91 (1.59)	7.01 (1.52)	7.10 (1.52)	<0.001
Pretax household income					<0.001
<$50,000, %	11.45	12.92	12.99	14.16	
$50,000-$74,999, %	22.28	22.26	24.93	24.51	
$75,000-$99,999, %	20.43	23.80	22.94	22.86	
≥$100,000, %	45.85	41.02	39.14	38.47	
Census tract college education rate (range: 0%-85%), mean (SD)	35.06% (17.08%)	32.55% (16.54%)	31.06% (15.96%)	29.54% (15.38%)	<0.001

Census tract median income					<0.001
<$50,000, %	20.04	23.99	27.63	28.91	
$50,000-$74,999, %	45.47	45.59	47.35	48.64	
$75,000-$99,999, %	24.03	22.62	20.02	17.23	
≥$100,000, %	10.46	7.81	5.01	5.22	
Maternal health					
Maternal probable depression, %	11.46	12.12	10.50	8.57	<0.001
Maternal current smoking, %	8.17	8.57	6.98	6.02	0.001
Prior health behaviors					
Prior depressive symptoms (range: 0-4), mean (SD)	1.22 (0.61)	1.27 (0.61)	1.22 (0.57)	1.15 (0.55)	<0.001
Prior overweight or obesity, %	20.53	21.06	20.92	17.88	0.004
Prior cigarette smoking, %	23.42	22.47	16.77	12.14	<0.001
Prior drinking, %	12.56	10.95	8.13	5.00	<0.001
Prior marijuana use, %	20.67	16.32	11.01	7.03	<0.001
Prior drug use other than marijuana, %	7.46	5.04	3.99	2.53	<0.001
Prior prescription drug misuse, %	8.47	7.90	6.68	5.17	<0.001
Prior number of lifetime sexual partners (range: 0-6), mean (SD)	0.32 (0.97)	0.26 (0.86)	0.18 (0.74)	0.11 (0.59)	<0.001
Prior history of early sexual initiation, %	10.72	7.62	4.95	3.43	<0.001
Prior history of sexually transmitted infections, %	0.49	0.48	0.14	0.05	0.001
Prior history of teen pregnancy, %	0.77	0.43	0.35	0.32	0.10

SES, socioeconomic status.

[a] ANOVA or chi-square tests were used to examine the mean levels (standard deviation, SD) of the characteristic or proportion of individuals within each prayer or meditation category with that characteristic.

Web Table 7. Religious service attendance, prayer or meditation in adolescence and health and well-being in young adulthood (Growing Up Today Study 1999 to 2007, 2010 or 2013 questionnaire wave, N ranged from 5,669 to 7,431[a])

	Religious Service Attendance			Prayer or Meditation		
	Never (Ref)	<1/week OR/RR/β (95% CI) [b]	≥ 1/week OR/RR/β (95% CI) [b]	<1/week OR/RR/β (95% CI) [b]	1-6 times/week OR/RR/β (95% CI) [b]	Once/day or more OR/RR/β (95% CI) [b]
Psychological Well-being						
Life satisfaction	0.00	0.02 (-0.07, 0.11)	0.10 (0.01, 0.19)*	0.02 (-0.07, 0.11)	0.05 (-0.04, 0.14)	0.07 (-0.02, 0.16)
Positive affect	0.00	0.07 (-0.01, 0.16)	0.14 (0.05, 0.23)**	0.03 (-0.06, 0.11)	0.04 (-0.04, 0.13)	0.08 (0.00, 0.17)
Self-esteem	0.00	0.03 (-0.06, 0.11)	0.03 (-0.06, 0.11)	0.00 (-0.08, 0.09)	0.09 (0.00, 0.18)*	0.07 (-0.02, 0.16)
Emotional processing	0.00	-0.02 (-0.11, 0.07)	-0.08 (-0.17, 0.01)	0.04 (-0.05, 0.13)	0.13 (0.03, 0.22)**	0.16 (0.07, 0.26)***
Emotional expression	0.00	-0.02 (-0.11, 0.07)	-0.05 (-0.14, 0.03)	0.10 (0.01, 0.19)*	0.16 (0.07, 0.25)***	0.18 (0.09, 0.27)***
Character and virtue						
Frequency of volunteering	0.00	0.05 (-0.03, 0.13)	0.13 (0.05, 0.21)***	0.11 (0.03, 0.19)*	0.21 (0.13, 0.29)***	0.28 (0.20, 0.36)***
Sense of mission	0.00	0.02 (-0.06, 0.11)	0.10 (0.02, 0.19)*	0.11 (0.03, 0.20)*	0.16 (0.08, 0.25)***	0.38 (0.30, 0.47)***
Forgiveness of others	0.00	0.14 (0.04, 0.23)**	0.38 (0.28, 0.47)***	0.28 (0.18, 0.38)***	0.43 (0.33, 0.53)***	0.63 (0.54, 0.73)***
Registered to vote	1.00	1.04 (1.01, 1.07)*	1.03 (1.00, 1.06)	1.00 (0.97, 1.03)	1.00 (0.97, 1.03)	1.02 (0.99, 1.04)
Physical health						
Number of physical health problems	0.00	0.06 (-0.02, 0.15)	-0.04 (-0.12, 0.05)	0.08 (-0.01, 0.17)	0.03 (-0.05, 0.11)	0.09 (0.01, 0.18)*
Overweight/obesity	1.00	0.99 (0.89, 1.11)	1.04 (0.93, 1.16)	1.03 (0.92, 1.15)	0.99 (0.89, 1.11)	1.00 (0.89, 1.12)
Mental health						
Depressive symptoms	0.00	-0.00 (-0.09, 0.09)	-0.09 (-0.18, -0.00)*	-0.06 (-0.14, 0.03)	-0.10 (-0.19, -0.02)*	-0.03 (-0.12, 0.05)
Depression diagnosis	1.00	0.91 (0.76, 1.09)	0.89 (0.74, 1.07)	0.97 (0.80, 1.17)	1.01 (0.83, 1.22)	0.93 (0.77, 1.13)
Anxiety symptoms	0.00	0.00 (-0.08, 0.09)	-0.08 (-0.17, 0.01)	0.03 (-0.06, 0.12)	0.03 (-0.06, 0.12)	0.08 (-0.01, 0.16)
Anxiety diagnosis	1.00	1.00 (0.81, 1.24)	0.88 (0.70, 1.10)	1.02 (0.82, 1.27)	1.06 (0.84, 1.33)	1.02 (0.81, 1.29)
Probable PTSD	1.00	0.86 (0.64, 1.16)	0.65 (0.48, 0.88)**	0.81 (0.58, 1.13)	1.16 (0.85, 1.58)	1.21 (0.89, 1.65)
Health Behaviors						
Cigarette smoking	1.00	0.97 (0.86, 1.10)	0.84 (0.73, 0.96)*	1.01 (0.88, 1.15)	1.07 (0.93, 1.22)	0.96 (0.84, 1.11)

Frequent binge drinking	1.00	1.07 (0.95, 1.20)	1.00 (0.88, 1.13)	0.96 (0.85, 1.08)	0.99 (0.88, 1.12)	0.90 (0.80, 1.02)
Marijuana use	1.00	1.01 (0.95, 1.07)	0.90 (0.84, 0.96)***	1.00 (0.94, 1.06)	0.95 (0.89, 1.02)	0.79 (0.74, 0.85)***
Any other illicit drug use	1.00	0.99 (0.80, 1.24)	0.79 (0.63, 0.99)*	0.93 (0.74, 1.16)	0.81 (0.64, 1.02)	0.62 (0.49, 0.78)***
Prescription drug misuse	1.00	1.08 (0.94, 1.23)	0.93 (0.80, 1.07)	0.90 (0.78, 1.03)	0.91 (0.79, 1.05)	0.77 (0.66, 0.89)***
Number of lifetime sexual partners	0.00	0.02 (-0.05, 0.10)	-0.15 (-0.23, -0.08)***	-0.02 (-0.10, 0.05)	-0.06 (-0.14, 0.01)	-0.31 (-0.39, -0.24)***
Early sexual initiation	1.00	0.90 (0.76, 1.08)	0.69 (0.57, 0.84)***	1.12 (0.93, 1.33)	0.97 (0.79, 1.19)	0.84 (0.68, 1.03)
History of STIs	1.00	1.06 (0.85, 1.31)	0.91 (0.73, 1.14)	0.93 (0.75, 1.16)	0.87 (0.69, 1.08)	0.69 (0.55, 0.86)***
Teen pregnancy	1.00	0.86 (0.48, 1.55)	0.83 (0.46, 1.51)	0.94 (0.52, 1.71)	0.73 (0.38, 1.37)	1.02 (0.56, 1.84)
Abnormal Pap test	1.00	0.92 (0.78, 1.09)	0.89 (0.75, 1.06)	0.87 (0.72, 1.04)	1.02 (0.85, 1.22)	0.81 (0.67, 0.98)*

CI, confidence interval; OR, odds ratio; PTSD, posttraumatic stress disorder; RR, risk ratio; STIs, sexually transmitted infections.

*P <0.05 before Bonferroni correction; **P <0.01 before Bonferroni correction; ***P <0.05 after Bonferroni correction (the p value cutoff for Bonferroni correction =0.05/26 outcomes =0.0019)

[a] The full analytic sample was restricted to those who had valid data on frequency of religious service attendance and frequency of prayer or meditation. The actual sample size for each analysis varies depending on the number of missing values on each outcome under investigation. Missing data on the covariates were imputed from previous questionnaire years; if no such data were available, missing were imputed with the mean values (continuous variables) or values of the largest category (categorical variables) of the non-missing data.

[b] Religious service attendance and prayer or meditation were simultaneously included in the model as exposure variables. The effect estimates were OR (binomial distribution, rare outcome defined as the prevalence<10%), RR (Poisson distribution, non-rare event defined as prevalence>=10%), or β (standardized effect size for continuous outcomes). If the reference value was "0", this indicates the outcome was a continuous variable, and the effect estimate was β; if the reference value was "1", this indicates the outcome was a binary variable, and the effect estimate was either OR or RR, depending on the distribution of the outcome variable. All models controlled for participants' age, race, sex, geographic region, their mother's age, race, marital status, socioeconomic status (subjective socioeconomic status, household income, census tract college education rate, and census tract median income), maternal depression, maternal smoking, participants' prior health status or prior health behaviors (prior depressive symptoms, overweight/obesity, smoking, drinking, marijuana use, other drug use, prescription drug misuse, number of sexual partners, early sexual initiation, history of sexually transmitted infections, history of teen pregnancy).

Web Table 8. Prayer or meditation in adolescence and health and well-being in young adulthood, adjusting for adulthood religious service attendance in 2005 as a sensitivity analysis (Growing Up Today Study 1999 to 2007, 2010 or 2013 questionnaire wave, N ranged from 5,681 to 7,448 [a])

Health and well-being outcomes	| Prayer or meditation											
	Less than once/week vs. Never				1-6 times/week vs. Never				Once/day or more vs. Never			
	RR[b]	β[c]	95% CI	P-value threshold	RR[b]	β[c]	95% CI	P-value threshold	RR[b]	β[c]	95% CI	P-value threshold
Psychological Well-being												
Life satisfaction		0.03	-0.05, 0.12			0.07	-0.01, 0.15			0.08	-0.00, 0.16	
Positive affect		0.05	-0.03, 0.13			0.06	-0.01, 0.14			0.09	0.01, 0.17	<0.05
Self-esteem		-0.00	-0.09, 0.08			0.07	-0.01, 0.15			0.05	-0.03, 0.13	
Emotional processing		0.04	-0.04, 0.13			0.12	0.04, 0.20	<0.01		0.16	0.08, 0.24	<0.0019[d]
Emotional expression		0.09	0.01, 0.18	<0.05		0.15	0.07, 0.23	<0.0019[d]		0.17	0.09, 0.25	<0.0019[d]
Character and Virtue												
Frequency of volunteering		0.10	0.03, 0.17	<0.01		0.18	0.10, 0.25	<0.0019[d]		0.19	0.12, 0.26	<0.0019[d]
Sense of mission		0.10	0.02, 0.18	<0.05		0.13	0.05, 0.21	<0.0019[d]		0.29	0.22, 0.37	<0.0019[d]
Forgiveness of others		0.31	0.22, 0.40	<0.0019[d]		0.47	0.39, 0.55	<0.0019[d]		0.62	0.54, 0.70	<0.0019[d]
Registered to vote	1.01		0.98, 1.03		1.00		0.97, 1.03		1.01		0.99, 1.04	
Physical Health												
Number of physical health problems		0.10	0.02, 0.18	<0.05		0.03	-0.05, 0.10			0.08	0.01, 0.16	<0.05
Overweight/obesity	1.03		0.93, 1.14		1.01		0.92, 1.12		1.02		0.92, 1.13	
Mental Health												
Depressive symptoms		-0.06	-0.14, 0.03			-0.11	-0.19, -0.03	<0.01		-0.03	-0.11, 0.05	
Depression diagnosis	0.96		0.81, 1.15		1.03		0.87, 1.22		1.00		0.84, 1.19	
Anxiety symptoms		0.03	-0.05, 0.11			0.03	-0.05, 0.10			0.08	0.00, 0.16	<0.05
Anxiety diagnosis	1.05		0.86, 1.29		1.11		0.91, 1.35		1.13		0.92, 1.37	
Probable PTSD	0.75		0.55, 1.02		1.03		0.78, 1.35		1.10		0.84, 1.45	
Health Behaviors												
Cigarette smoking	1.04		0.92, 1.18		1.13		1.01, 1.27	<0.05	1.10		0.98, 1.25	
Frequent binge drinking	1.00		0.90, 1.12		1.08		0.98, 1.20		1.09		0.98, 1.21	
Marijuana use	1.03		1.07, 1.09		1.02		0.96, 1.08		0.92		0.86, 0.98	<0.01

	RR/β	CI	P	RR/β	CI	P	RR/β	CI	P
Any other illicit drug use	1.05	0.85, 1.29		1.01	0.82, 1.24		0.88	0.71, 1.09	
Prescription drug misuse	0.95	0.83, 1.08		1.00	0.88, 1.13		0.90	0.79, 1.03	
Number of lifetime sexual partners	0.00	-0.07, 0.07		-0.02	-0.09, 0.04		-0.19	-0.26, -0.13	<0.0019[d]
Early sexual initiation	1.07	0.91, 1.26		0.90	0.75, 1.07		0.80	0.67, 0.96	<.05
History of STIs	0.94	0.77, 1.15		0.88	0.72, 1.07		0.75	0.61, 0.92	<0.01
Teen pregnancy	0.92	0.52, 1.62		0.72	0.39, 1.32		1.04	0.60, 1.81	
Abnormal Pap test	0.83	0.70, 0.99	<0.05	0.98	0.84, 1.15		0.82	0.69, 0.97	<0.05

Abbreviations: RR, risk ratio; CI, confidence interval; PTSD, posttraumatic stress disorder; STIs, sexually transmitted infections.

[a] The full analytic sample was restricted to those who had valid data on frequency of prayer or meditation. The actual sample size for each analysis varies depending on the number of missing values on each outcome under investigation. Missing data on the covariates were imputed from previous questionnaire years; if no such data were available, missing were imputed with the mean values (continuous variables) or values of the largest category (categorical variables) of the non-missing data. All models controlled for participants' age, race, sex, geographic region, their mother's age, race, marital status, socioeconomic status (subjective socioeconomic status, household income, census tract college education rate, and census tract median income), maternal depression, maternal smoking, participants' prior health status or prior health behaviors (prior depressive symptoms, overweight/obesity, smoking, drinking, marijuana use, other drug use, prescription drug misuse, number of sexual partners, early sexual initiation, history of sexually transmitted infections, history of teen pregnancy), and frequency of religious service attendance in adulthood (never, less than weekly, at least weekly; measured at questionnaire wave 2005).

[b] The effect estimates for the outcomes of probable PTSD, any other illicit drug use and teen pregnancy were odds ratio (these outcomes were rare [prevalence<10%], so the odds ratio would approximate RR). The effect estimates for other dichotomized outcomes were RR.

[c] All continuous outcomes were standardized (mean=0, standard deviation=1), and β was the standardized effect size.

[d] P <0.05 after Bonferroni correction (the p value cutoff for Bonferroni correction=0.05/26 outcomes=0.0019).