

Method

Measures

Data source and study period

Data were drawn from the National Crime Victimization Survey (NCVS), survey years 2014–2022. The NCVS is a nationally representative, stratified multistage household survey administered by the U.S. Census Bureau for the Bureau of Justice Statistics (Bureau of Justice Statistics, 2024).

Unit of analysis and analytic samples

The unit of analysis was the victimization incident. We examined three incident scopes: Total (all incidents), Theft (property crime), and Violent (nonfatal personal crime).

Social context of the incident (primary definition)

We operationalized incident social context in two steps. First, we defined a three-level measure of incident social context: (a) Solo/Alone (a single offender and no evidence the offense was observed by others), (b) Co-offense/Group (multiple offenders participated), and (c) Observed (a single offender, but the incident was observed by someone else). Second, for the primary analyses we derived a binary indicator of Social context, coding incidents as Social = Co-offense/Group or Observed, versus Solo/Alone. This primary binary captures both co-offending and offenses committed in the presence of others.

Sensitivity analysis (co-offending-only; conventional operationalization)

Because the substantive interpretation of observed incidents may differ from co-offending, we conducted a secondary analysis using a conventional operationalization of social

offending that excludes observed incidents. For this sensitivity analysis, Social context was defined as Co-offense/Group versus Solo/Alone (Observed incidents omitted).

Robustness check (unweighted models). As a robustness check, we repeated the primary Total-scope models without NCVS survey weights. Results are reported in the Supplement (Tables S5–S6).

Offender age was coded from NCVS age-group data. For solo incidents, we used the offender's age group. For co-offending incidents, we used youngest and oldest co-offender age groups; when only one value was available, it was applied to both fields. Among co-offending incidents with valid age codes, 87.0% (survey-weighted) had offenders in the same or adjacent age bracket; 13.0% spanned two or more brackets.

C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	1 %
type	up		e N	Group N	N	erved) N	e %	Group	%	
										%
T	U	2	9	6	3	10	4	3	1	4
heft	nde	10102	4652	3800	785	1655	5.1	0.4	8	8.4
	r				5					
	12									
T	1	4	1	1	1	26	4	3	2	5
heft	2–	65649	9132	42773	177	0541	1.1	0.7	5.3	6
	14		3		67					
T	1	8	3	2	1	42	4	3	2	5
heft	5–	03566	4781	65869	623	8187	3.3	3.1	0.2	3.3
	17		1		18					
T	1	9	4	3	1	49	4	3	1	5

	C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia	
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %	
type	up		e N	Group N	N	erved) N	e %	Group	%		%
heft	8-	64149	2680	07599	919	9534	4.3	1.9	9.9	1.8	
	20		1		34						
T	2	2	1	6	6	13	5	2	2	4	
heft	1-	928890	4871	78412	543	32797	0.8	3.2	2.3	5.5	
	29		40		85						
T	3	4	2	7	9	16	5	1	2	3	
heft	0+	332626	5487	30038	236	53724	8.8	6.8	1.3	8.2	
		57		86							
T	U	7	3	2	1	39	4	2	2	5	
otal	nde	73249	6116	08788	895	8293	6.7	7	4.5	1.5	
r		0		05							
	12										
T	1	2	1	6	8	15	4	2	3	5	
otal	2-	733752	1601	71277	707	41978	2.4	4.6	1.9	6.4	
	14		09		01						
T	1	3	1	9	7	17	4	3	2	5	
otal	5-	094232	3078	97387	551	52569	2.3	2.2	4.4	6.6	
	17		21		82						
T	1	3	1	1	6	17	4	3	2	5	
otal	8-	285838	5063	075954	609	36884	5.8	2.7	0.1	2.9	
	20		92		30						
T	2	1	6	2	2	45	5	2	2	4	
otal	1-	0716283	0717	236077	282	18144	6.7	0.9	1.3	2.2	

	C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia	
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %	
type	up		e N	Group N	N	erved) N	e %	Group	%		%
	29		22		067						
T	3		2	1	2	4	72	6	1	2	3
otal	0+	0839569	3392	492521	803	96204	4.3	2	3.1	5	
		373			683						
V	U		5	2	1	1	29	4	2	2	5
iole	nde	63147	6650	44988	516	6638	7.3	5.7	6.9	2.7	
nt	r		9		50						
	12										
V	1		2	9	5	7	12	4	2	3	5
iole	2-	268103	6878	28503	529	81437	2.7	3.3	3.2	6.5	
nt	14		6		33						
V	1		2	9	7	5	13	4	3	2	5
iole	5-	290666	6001	31518	928	24381	1.9	1.9	5.9	7.8	
nt	17		0		64						
V	1		2	1	7	4	12	4	3	2	5
iole	8-	321689	0795	68354	689	37350	6.5	3.1	0.2	3.3	
nt	20		91		96						
V	2		7	4	1	1	31	5	2	2	4
iole	1-	787392	5845	557665	627	85347	8.9	0	0.9	0.9	
nt	29		82		682						
V	3		1	1	1	3	56	6	1	2	3
iole	0+	6506943	0843	762483	879	42479	5.7	0.7	3.5	4.2	
nt		616			997						

C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %
type	up		e N	Group N	N	erved) N	e %	Group	%	%

	A	A	F	df	p	p	Sc
ge group 1	ge group 2				(Bonferroni	ope)
U	12	2.	1	0.	1	T	
nder 12	-14	3		1		otal	
U	15	1.	1	0.	1	T	
nder 12	-17	9		2		otal	
U	18	0.	1	0.	1	T	
nder 12	-20	1		7		otal	
U	21	6.	1	0.	0.	T	
nder 12	-29	4		0	2	otal	
U	30	25	1	0	0	T	
nder 12	+	.0				otal	
12	15	0.	1	0.	1	T	
-14	-17	0		9		otal	
12	18	1.	1	0.	1	T	
-14	-20	4		2		otal	
12	21	28	1	0	0	T	
-14	-29	.4				otal	
12	30	96	1	0	0	T	
-14	+	.6				otal	
15	18	3.	1	0.	1	T	
-17	-20	4		1		otal	

	C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia	
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %	
type	up		e N	Group N	N	erved) N	e %	Group	%		%
	15		21		64		1	0	0	T	
-17		-29		.1						otal	
	15		30		13		1	0	0	T	
-17		+		7.539						otal	
	18		21		56		1	0	0	T	
-20		-29		.0						otal	
	18		30		14		1	0	0	T	
-20		+		2.614						otal	
	21		30		55		1	0	0	T	
-29		+		.9						otal	
	U		12		2.		1	0.	1	T	
nder 12		-14		4			1	1		heft	
	U		15		1.		1	0.	1	T	
nder 12		-17		1			3			heft	
	U		18		0.		1	0.	1	T	
nder 12		-20		6			4			heft	
	U		21		0.		1	0.	1	T	
nder 12		-29		5			5			heft	
	U		30		7.		1	0.	0.	T	
nder 12		+		3			0	1		heft	
	12		15		0.		1	0.	1	T	
-14		-17		6			5			heft	
	12		18		1.		1	0.	1	T	

C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %
type	up		e N	Group N	N	erved) N	e %	Group	%	%
-14		-20	4		2					heft
	12		21	11	1	8e	0.		T	
-14		-29	.7		-04	0			heft	
	12		30	35	1	0	0		T	
-14		+	.3						heft	
	15		18	0.	1	0.	1		T	
-17		-20	2		6				heft	
	15		21	8.	1	0.	0.		T	
-17		-29	1		0	1			heft	
	15		30	28	1	0	0		T	
-17		+	.0						heft	
	18		21	7.	1	0.	0.		T	
-20		-29	9		0	1			heft	
	18		30	44	1	0	0		T	
-20		+	.1						heft	
	21		30	23	1	0	0		T	
-29		+	.9						heft	
	U		12	0.	1	0.	1		Vi	
nder 12		-14	9		3				olent	
	U		15	1.	1	0.	1		Vi	
nder 12		-17	3		2				olent	

	C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia	
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %	
type	up		e N	Group N	N	erved) N	e %	Group	%		%
	U		18		0.		1		0.		Vi
nder 12	-20		0				9				olent
	U		21		7.		1		0.		Vi
nder 12	-29		1				0		1		olent
	U		30		20		1		0		Vi
nder 12	+		.8					-04			olent
	12		15		0.		1		0.		Vi
-14	-17		2				7				olent
	12		18		0.		1		0.		Vi
-14	-20		8				4				olent
	12		21		27		1		0		Vi
-14	-29		.4								olent
	12		30		77		1		0		Vi
-14	+		.3								olent
	15		18		2.		1		0.		Vi
-17	-20		9				1				olent
	15		21		51		1		0		Vi
-17	-29		.5								olent
	15		30		10		1		0		Vi
-17	+		5.527								olent
	18		21		43		1		0		Vi
-20	-29		.7								olent
	18		30		97		1		0		Vi

C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %
type	up		e N	Group N	N	erved) N	e %	Group	%	%

-20	+	.8								olent
	21		30		43		1	0	0	Vi
-29	+	.4								olent
	A		A		F		df	p	p	Sc
ge group 1		ge group 2					(Bonferroni	ope)

	U	12	0	1	1.	1	T
nder 12	-14			0			otal
	U	15	3.	1	0.	0.	T
nder 12	-17	8		1	1	8	otal
	U	18	2.	1	0.	1	T
nder 12	-20	4		1			otal
	U	21	10	1	0.	0.	T
nder 12	-29	.7		0	0	0	otal
	U	30	75	1	0	0	T
nder 12	+	.9					otal
	12	15	5.	1	0.	0.	T
-14	-17	3		0	3	0	otal
	12	18	3.	1	0.	0.	T
-14	-20	7		1	9	9	otal
	12	21	14	1	2e	0.	T
-14	-29	.4		-04	0	0	otal
	12	30	11	1	0	0	T

C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %
type	up		e N	Group N	N	erved) N	e %	Group	%	%
-14	+		5.014							otal
	15	18	0.	1	0.	1	1	T		
-17	-20	5		5						otal
	15	21	73	1	0	0	0	T		
-17	-29	.8								otal
	15	30	25	1	0	0	0	T		
-17	+	3.018								otal
	18	21	82	1	0	0	0	T		
-20	-29	.5								otal
	18	30	38	1	0	0	0	T		
-20	+	9.681								otal
	21	30	16	1	0	0	0	T		
-29	+	2.962								otal
	U	12	0.	1	0.	1	1	T		
nder 12	-14	2		7						heft
	U	15	0.	1	0.	0.	1	T		
nder 12	-17	3		6						heft
	U	18	0.	1	0.	0.	1	T		
nder 12	-20	1		8						heft
	U	21	3.	1	0.	0.	0.	T		
nder 12	-29	7		1	9					heft

C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %
type	up		e N	Group N	N	erved) N	e %	Group	%	
										%
U		30		19		1	0	3e	T	
nder 12	+	.1					-04		heft	
12		15		0.		1	0.	1	T	
-14	-17	0				9			heft	
12		18		0.		1	0.	1	T	
-14	-20	1				8			heft	
12		21		12		1	6e	0.	T	
-14	-29	.4				-04	0		heft	
12		30		51		1	0	0	T	
-14	+	.6							heft	
15		18		0.		1	0.	1	T	
-17	-20	2				6			heft	
15		21		20		1	0	2e	T	
-17	-29	.4					-04		heft	
15		30		76		1	0	0	T	
-17	+	.9							heft	
18		21		16		1	1e	9e	T	
-20	-29	.9				-04	-04		heft	
18		30		82		1	0	0	T	
-20	+	.4							heft	
21		30		43		1	0	0	T	
-29	+	.5							heft	
U		12		0		1	1.	1	Vi	

C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %
type	up		e N	Group N	N	erved) N	e %	Group	%	
										%
15	30	17	1	0	0	Vi				
-17	+	8.445								
18	21	79	1	0	0	Vi				
-20	-29	.1								
18	30	27	1	0	0	Vi				
-20	+	5.679								
21	30	10	1	0	0	Vi				
-29	+	9.147								

Crime type	Age group	OR	95% CI
Total	Under 12	0.8	[0.61, 1.09]
Total	12-14	1.0	[0.78, 1.26]
Total	18-20	0.9	[0.73, 1.01]
Total	21-29	0.6	[0.48, 0.64]
Total	30+	0.4	[0.35, 0.48]
Theft	Under 12	0.8	[0.56, 1.20]
Theft	12-14	1.1	[0.84, 1.48]
Theft	18-20	0.9	[0.74, 1.19]
Theft	21-29	0.7	[0.59, 0.91]
Theft	30+	0.5	[0.43, 0.68]
Violent	Under 12	0.8	[0.57, 1.15]
Violent	12-14	0.9	[0.72, 1.25]
Violent	18-20	0.8	[0.67, 1.03]

C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %
type	up		e N	Group N	N	erved) N	e %	Group	%	
							%			
Violent		21-29			0.5			[0.42, 0.61]		
Violent		30+			0.4			[0.31, 0.46]		
Crime type		Age group			OR			95% CI		
Total		Under 12			0.9			[0.70, 1.27]		
Total		12-14			1.1			[0.91, 1.46]		
Total		15-17			1.2			[0.99, 1.37]		
Total		21-29			0.7			[0.58, 0.73]		
Total		30+			0.5			[0.42, 0.54]		
Theft		Under 12			0.9			[0.61, 1.25]		
Theft		12-14			1.2			[0.89, 1.56]		
Theft		15-17			1.1			[0.84, 1.34]		
Theft		21-29			0.8			[0.65, 0.93]		
Theft		30+			0.6			[0.49, 0.68]		
Violent		Under 12			1.0			[0.68, 1.39]		
Violent		12-14			1.1			[0.86, 1.50]		
Violent		15-17			1.2			[0.97, 1.48]		
Violent		21-29			0.6			[0.52, 0.71]		
Violent		30+			0.5			[0.39, 0.53]		
Age group		OR			95% CI					
Under 12		0.6			[0.44, 0.70]					
12-14		0.9			[0.76, 1.06]					
18-20		0.8			[0.64, 0.87]					

C	A	W	S	C	O	So	S	C	O	S
rim	ge	eighted	olo/	o-	bser	cial	olo/	o-	bser	ocia
e	gro	N (total)	Alon	offense/	ved	(Group+Obs	Alon	offense/	ved	l %
type	up		e N	Group N	N	erved) N	e %	Group	%	
%										

21-29	0.5	[0.44, 0.57]
30+	0.4	[0.33, 0.42]
Age group	OR	95% CI
Under 12	0.6	[0.43, 0.74]
12-14	0.7	[0.59, 0.88]
18-20	0.8	[0.67, 0.95]
21-29	0.4	[0.35, 0.46]
30+	0.2	[0.17, 0.23]

Results

Model-implied predicted probabilities of social context (co-offending or observed offending vs. solo offending) across age groups are presented in Table 1 and depicted in Figure 1. Across all offense types, the likelihood of offending in a social context followed a consistent developmental pattern: social offending was most prevalent during adolescence, peaked between ages 12 and 17, and declined monotonically into adulthood. Adults aged 30 and older were the least likely to offend in social contexts. Emerging adults (ages 18–20) and young adults (ages 21–29) occupied intermediate positions, with predicted probabilities falling between those of adolescents and older adults.

Total offenses. For total offenses, the predicted probability of social context was highest among 15- to 17-year-olds ($\hat{p} = .573$, 95% CI [.534, .610]) and 12- to 14-year-olds ($\hat{p} = .571$

[.509, .631]), followed closely by 18- to 20-year-olds ($\hat{p} = .536$ [.509, .562]) and children under 12 ($\hat{p} = .524$ [.447, .600]). By contrast, adults aged 30 and older had a predicted probability of .353 [.326, .380]. In the weighted logistic regression model (see Figure 2), all younger age groups had significantly elevated odds of social offending relative to adults aged 30 and older: adolescents aged 15–17 (OR = 2.46, 95% CI [2.11, 2.87]) and 12–14 (OR = 2.44 [2.05, 2.91]) showed the largest effects, followed by emerging adults aged 18–20 (OR = 2.12 [1.87, 2.40]), children under 12 (OR = 2.02 [1.57, 2.61]), and young adults aged 21–29 (OR = 1.37 [1.26, 1.48]).

Theft offenses. A similar pattern emerged for theft, though the age gradient was somewhat attenuated. Social context was most likely among 12- to 14-year-olds ($\hat{p} = .577$ [.520, .632]) and 15- to 17-year-olds ($\hat{p} = .552$ [.503, .600]), with adults aged 30 and older again showing the lowest probability ($\hat{p} = .394$ [.371, .416]). Relative to the 30-and-older reference group, adolescents aged 12–14 had the highest odds (OR = 2.10 [1.63, 2.70]), followed by 15- to 17-year-olds (OR = 1.90 [1.50, 2.41]), 18- to 20-year-olds (OR = 1.80 [1.52, 2.14]), children under 12 (OR = 1.66 [1.19, 2.30]), and 21- to 29-year-olds (OR = 1.38 [1.22, 1.56]).

Violent offenses. The developmental pattern was most pronounced for violent offenses. Adolescents aged 15–17 had the highest predicted probability of social context ($\hat{p} = .580$ [.529, .629]), followed by 12- to 14-year-olds ($\hat{p} = .569$ [.496, .640]) and emerging adults aged 18–20 ($\hat{p} = .534$ [.498, .569]). Adults aged 30 and older had the lowest probability ($\hat{p} = .342$ [.311, .375]). Odds ratios relative to the 30-and-older group were largest for 15- to 17-year-olds (OR = 2.65 [2.20, 3.20]) and 12- to 14-year-olds (OR = 2.54 [2.07, 3.12]), with emerging adults (OR = 2.20 [1.88, 2.59]) and children under 12 (OR = 2.14 [1.58, 2.90]) also showing substantially

elevated odds. Young adults aged 21–29, while significantly more likely than older adults to offend socially ($OR = 1.34$ [1.22, 1.46]), were clearly distinguished from the adolescent peak.

Bonferroni-adjusted pairwise age-group comparisons are reported as corroborative analyses in the Supplement (Tables S1–S3 for the primary definition; Tables S4–S6 for the co-offending-only definition).

Tables and figures

Table 1

Weighted distribution of incident social context by age group and crime type (primary definition: Solo, Co-offense, Observed; Social = Co-offense + Observed).

Total

Age group	Solo	Co-offense	Observed	Social	Total
<12	361160 (47.6%)	208788 (27.5%)	189505 (25.0%)	398293 (52.4%)	759453 (100.0%)
12–14	116010 9 (42.9%)	671277 (24.8%)	870701 (32.2%)	154197 8 (57.1%)	270208 7 (100.0%)
15–17	130782 1 (42.7%)	997387 (32.6%)	755182 (24.7%)	175256 9 (57.3%)	306039 0 (100.0%)
18–20	150639 2 (46.4%)	107595 (33.2%)	660930 (20.4%)	173688 4 (53.6%)	324327 6 (100.0%)
21–29	607172 2 (57.3%)	223607 7 (21.1%)	228206 7 (21.5%)	451814 4 (42.7%)	105898 66 (100.0%)
30+	133923 73 (64.7%)	249252 1 (12.0%)	480368 3 (23.2%)	729620 4 (35.3%)	206885 77 (100.0%)

Note. Ns and percentages are survey-weighted.

Theft

Age	Solo	Co-	Observ	Social	Total
group	offense		ed		
<12	94652	63800	37855	101655	196307
	(48.2%)	(32.5%)	(19.3%)	(51.8%)	(100.0%)
12–14	191323	142773	117767	260541	451863
	(42.3%)	(31.6%)	(26.1%)	(57.7%)	(100.0%)
15–17	347811	265869	162318	428187	775998
	(44.8%)	(34.3%)	(20.9%)	(55.2%)	(100.0%)
18–20	426801	307599	191934	499534	926334
	(46.1%)	(33.2%)	(20.7%)	(53.9%)	(100.0%)
21–29	148714	678412	654385	133279	281993
	0 (52.7%)	(24.1%)	(23.2%)	7 (47.3%)	7 (100.0%)
30+	254875	730038	923686	165372	420248
	7 (60.6%)	(17.4%)	(22.0%)	4 (39.4%)	1 (100.0%)

Note. Ns and percentages are survey-weighted.

Violent

Age	Solo	Co-	Observ	Social	Total
group	offense		ed		
<12	266509	144988	151650	296638	563147
	(47.3%)	(25.7%)	(26.9%)	(52.7%)	(100.0%)
12–14	968786	528503	752933	128143	225022
	(43.1%)	(23.5%)	(33.5%)	7 (56.9%)	2 (100.0%)
15–17	960010	731518	592864	132438	228439
	(42.0%)	(32.0%)	(26.0%)	1 (58.0%)	2 (100.0%)
18–20	107959	768354	468996	123735	231694
	1 (46.6%)	(33.2%)	(20.2%)	0 (53.4%)	1 (100.0%)
21–29	458458	155766	162768	318534	776992

	2 (59.0%)	5 (20.0%)	2 (20.9%)	7 (41.0%)	9 (100.0%)
30+	108436	176248	387999	564247	164860
	16 (65.8%)	3 (10.7%)	7 (23.5%)	9 (34.2%)	96 (100.0%)

Note. Ns and percentages are survey-weighted.

Figures

Figure 1. Predicted probability of social context (co-offense + observed) by age group, with 95% confidence intervals.

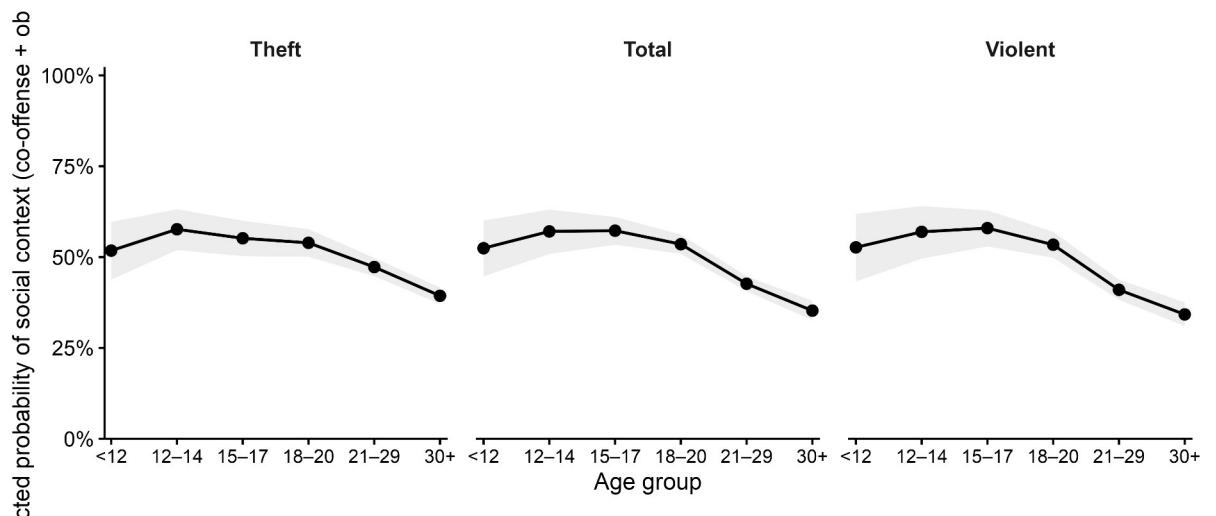
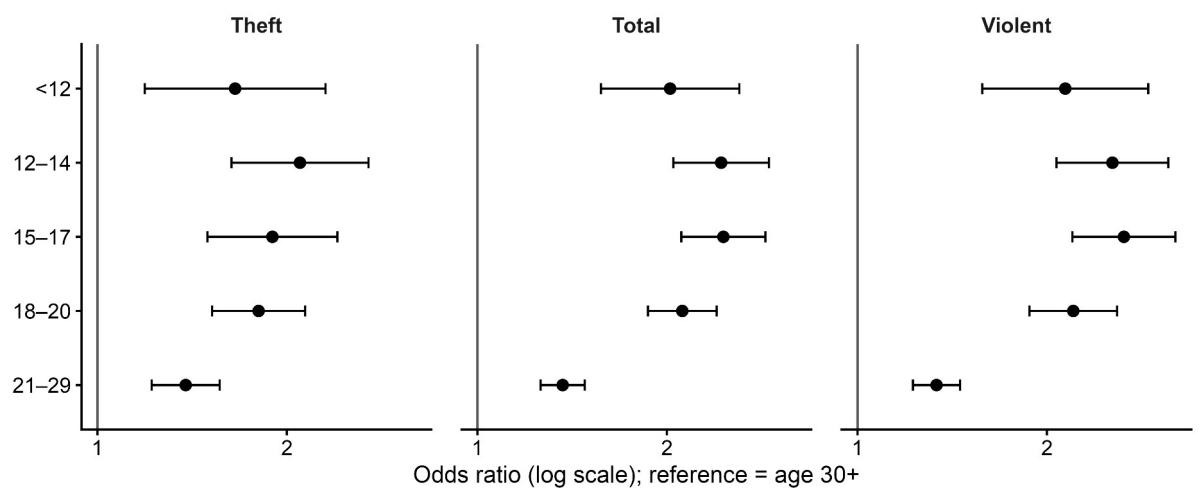


Figure 2. Odds ratios from weighted logistic regression predicting social context (reference = age 30+), with 95% confidence intervals.



Supplement

A. Weighted primary definition (social = co-offense + observed): Bonferroni pairwise comparisons

Total		
Contrast	OR [95% CI]	Bonferroni p
(30+) - under_12	0.49 [0.34, 0.72]	< .001
(30+) - (12-14)	0.41 [0.32, 0.53]	< .001
(30+) - (15-17)	0.41 [0.32, 0.51]	< .001
(30+) - (18-20)	0.47 [0.39, 0.57]	< .001
(30+) - (21-29)	0.73 [0.65, 0.83]	< .001
under_12 - (12-14)	0.83 [0.57, 1.21]	= 1.000
under_12 - (15-17)	0.82 [0.53, 1.27]	= 1.000
under_12 - (18-20)	0.96 [0.62, 1.48]	= 1.000
under_12 - (21-29)	1.48 [0.98, 2.23]	= .073
(12-14) - (15-17)	0.99 [0.69, 1.42]	= 1.000
(12-14) - (18-20)	1.15 [0.81, 1.64]	= 1.000
(12-14) - (21-29)	1.79 [1.31, 2.44]	< .001
(15-17) - (18-20)	1.16 [0.91, 1.49]	= 1.000
(15-17) - (21-29)	1.80 [1.45, 2.24]	< .001
(18-20) - (21-29)	1.55 [1.30, 1.84]	< .001

Theft		
Contrast	OR [95% CI]	Bonferroni p
(30+) - under_12	0.60 [0.37, 0.99]	= .039
(30+) - (12-14)	0.48 [0.33, 0.69]	< .001
(30+) - (15-17)	0.53 [0.37, 0.75]	< .001
(30+) - (18-20)	0.55 [0.43, 0.71]	< .001

(30+) - (21-29)	0.72 [0.60, 0.87]	< .001
under_12 - (12-14)	0.79 [0.43, 1.45]	= 1.000
under_12 - (15-17)	0.87 [0.48, 1.59]	= 1.000
under_12 - (18-20)	0.92 [0.53, 1.60]	= 1.000
under_12 - (21-29)	1.20 [0.72, 2.00]	= 1.000
(12-14) - (15-17)	1.11 [0.72, 1.71]	= 1.000
(12-14) - (18-20)	1.16 [0.76, 1.77]	= 1.000
(12-14) - (21-29)	1.52 [1.05, 2.20]	= .013
(15-17) - (18-20)	1.05 [0.73, 1.51]	= 1.000
(15-17) - (21-29)	1.37 [0.98, 1.92]	= .082
(18-20) - (21-29)	1.31 [0.99, 1.72]	= .069

Violent

Contrast	OR [95% CI]	Bonferroni p
(30+) - under_12	0.47 [0.30, 0.73]	< .001
(30+) - (12-14)	0.39 [0.29, 0.53]	< .001
(30+) - (15-17)	0.38 [0.29, 0.50]	< .001
(30+) - (18-20)	0.45 [0.36, 0.58]	< .001
(30+) - (21-29)	0.75 [0.66, 0.85]	< .001
under_12 - (12-14)	0.84 [0.53, 1.33]	= 1.000
under_12 - (15-17)	0.81 [0.48, 1.36]	= 1.000
under_12 - (18-20)	0.97 [0.57, 1.65]	= 1.000
under_12 - (21-29)	1.60 [0.99, 2.59]	= .061
(12-14) - (15-17)	0.96 [0.64, 1.45]	= 1.000
(12-14) - (18-20)	1.15 [0.76, 1.74]	= 1.000
(12-14) - (21-29)	1.90 [1.34, 2.70]	< .001

(15-17) - (18-20)	1.20 [0.88, 1.65]	= 1.000
(15-17) - (21-29)	1.99 [1.50, 2.63]	< .001
(18-20) - (21-29)	1.65 [1.32, 2.06]	< .001

B. Weighted co-offending-only definition (social = co-offense only)

B1. Descriptives

Total

Age group	Weighted N co-offense	Weighted % co-offense	95% CI (%)
<12	208788	27.5%	[22.80, 32.20]
12–14	671277	24.8%	[21.50, 28.20]
15–17	997387	32.6%	[29.40, 35.70]
18–20	1075954	33.2%	[30.00, 36.30]
21–29	2236077	21.1%	[19.80, 22.40]
30+	2492521	12.0%	[11.00, 13.10]

Theft

Age group	Weighted N co-offense	Weighted % co-offense	95% CI (%)
<12	63800	32.5%	[24.50, 40.50]
12–14	142773	31.6%	[26.40, 36.80]
15–17	265869	34.3%	[30.10, 38.40]
18–20	307599	33.2%	[29.60, 36.80]
21–29	678412	24.1%	[21.50, 26.60]
30+	730038	17.4%	[15.50, 19.20]

Violent

Age group	Weighted N co-offense	Weighted % co-offense	95% CI (%)

<12	144988	25.7%	[20.00, 31.50]
12–14	528503	23.5%	[19.40, 27.50]
15–17	731518	32.0%	[27.90, 36.20]
18–20	768354	33.2%	[29.10, 37.20]
21–29	1557665	20.0%	[18.50, 21.60]
30+	1762483	10.7%	[9.20, 12.20]

B2. Bonferroni pairwise comparisons

Total

Contrast	OR [95% CI]	Bonferroni p
(30+) - under_12	0.36 [0.25, 0.53]	< .001
(30+) - (12-14)	0.41 [0.32, 0.54]	< .001
(30+) - (15-17)	0.28 [0.22, 0.36]	< .001
(30+) - (18-20)	0.28 [0.22, 0.34]	< .001
(30+) - (21-29)	0.51 [0.44, 0.59]	< .001
under_12 - (12-14)	1.15 [0.76, 1.73]	= 1.000
under_12 - (15-17)	0.78 [0.52, 1.18]	= 1.000
under_12 - (18-20)	0.76 [0.51, 1.14]	= .691
under_12 - (21-29)	1.42 [0.99, 2.03]	= .069
(12-14) - (15-17)	0.68 [0.52, 0.89]	< .001
(12-14) - (18-20)	0.67 [0.51, 0.87]	< .001
(12-14) - (21-29)	1.23 [0.95, 1.61]	= .294
(15-17) - (18-20)	0.97 [0.76, 1.26]	= 1.000
(15-17) - (21-29)	1.81 [1.45, 2.25]	< .001
(18-20) - (21-29)	1.85 [1.47, 2.34]	< .001

Theft

Contrast	OR [95% CI]	Bonferroni p
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(30+) - under_12	0.44 [0.24, 0.78]	< .001
(30+) - (12-14)	0.46 [0.30, 0.69]	< .001
(30+) - (15-17)	0.40 [0.30, 0.55]	< .001
(30+) - (18-20)	0.42 [0.31, 0.58]	< .001
(30+) - (21-29)	0.66 [0.55, 0.81]	< .001
under_12 - (12-14)	1.04 [0.55, 1.97]	= 1.000
under_12 - (15-17)	0.92 [0.50, 1.71]	= 1.000
under_12 - (18-20)	0.97 [0.52, 1.80]	= 1.000
under_12 - (21-29)	1.52 [0.85, 2.73]	= .538
(12-14) - (15-17)	0.89 [0.59, 1.32]	= 1.000
(12-14) - (18-20)	0.93 [0.62, 1.40]	= 1.000
(12-14) - (21-29)	1.46 [0.96, 2.21]	= .122
(15-17) - (18-20)	1.05 [0.74, 1.48]	= 1.000
(15-17) - (21-29)	1.65 [1.21, 2.23]	< .001
(18-20) - (21-29)	1.57 [1.14, 2.15]	< .001

Violent

Contrast	OR [95% CI]	Bonferroni p
(30+) - under_12	0.35 [0.21, 0.56]	< .001
(30+) - (12-14)	0.39 [0.29, 0.53]	< .001
(30+) - (15-17)	0.25 [0.19, 0.35]	< .001
(30+) - (18-20)	0.24 [0.19, 0.31]	< .001
(30+) - (21-29)	0.48 [0.39, 0.58]	< .001
under_12 - (12-14)	1.13 [0.69, 1.85]	= 1.000
under_12 - (15-17)	0.74 [0.44, 1.24]	= 1.000
under_12 - (18-20)	0.70 [0.43, 1.13]	= .437
under_12 - (21-29)	1.38 [0.88, 2.16]	= .497

(12-14) - (15-17)	0.65 [0.48, 0.89]	< .001
(12-14) - (18-20)	0.62 [0.45, 0.86]	< .001
(12-14) - (21-29)	1.22 [0.90, 1.66]	= .794
(15-17) - (18-20)	0.95 [0.70, 1.29]	= 1.000
(15-17) - (21-29)	1.88 [1.43, 2.47]	< .001
(18-20) - (21-29)	1.98 [1.53, 2.56]	< .001

C. Unweighted robustness (Total only; co-offending-only definition)

As a robustness check, we replicated the co-offending-only analysis without survey weights. Results were consistent in direction with the weighted analyses.

C1. Descriptives

Age group	Unweighted N	Unweighted % co-offense
30+	9869	11.7%
<12	386	27.7%
12–14	1033	27.7%
15–17	1259	35.9%
18–20	1432	33.7%
21–29	4913	20.6%

C2. Logistic regression odds ratios (reference = 30+)

Age group	OR [95% CI]	p
<12	2.91 [2.30, 3.65]	< .001
12–14	2.90 [2.50, 3.37]	< .001
15–17	4.25 [3.73, 4.84]	< .001
18–20	3.86 [3.40, 4.37]	< .001
21–29	1.97 [1.80, 2.16]	< .001

C3. Bonferroni pairwise comparisons

Contrast	OR [95% CI]	Bonferroni p
(30+) - under_12	0.34 [0.24, 0.49]	< .001
(30+) - (12-14)	0.34 [0.28, 0.43]	< .001
(30+) - (15-17)	0.24 [0.19, 0.29]	< .001
(30+) - (18-20)	0.26 [0.21, 0.31]	< .001
(30+) - (21-29)	0.51 [0.44, 0.58]	< .001
under_12 - (12-14)	1.00 [0.68, 1.48]	= 1.000
under_12 - (15-17)	0.68 [0.47, 1.00]	= .046
under_12 - (18-20)	0.75 [0.52, 1.09]	= .383
under_12 - (21-29)	1.48 [1.04, 2.09]	= .016
(12-14) - (15-17)	0.68 [0.52, 0.89]	< .001
(12-14) - (18-20)	0.75 [0.58, 0.98]	= .021
(12-14) - (21-29)	1.47 [1.17, 1.85]	< .001
(15-17) - (18-20)	1.10 [0.87, 1.40]	= 1.000
(15-17) - (21-29)	2.16 [1.76, 2.64]	< .001
(18-20) - (21-29)	1.96 [1.61, 2.38]	< .001