



Supplemental Figure A. *Study enrollment timeline*
Note. Timepoints used for primary study variables in **bold**.

Supplemental Table A. *Bivariate correlations*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. G1 Grandparent AUD	--	.23**	.20*	-.09	-.03	-.02	.22**	-.10	.09	.02	-.01
2. G1 Grandparent Divorce	.15*	--	.15**	.19**	-.01	-.07	.21**	-.44**	.19**	.01	-.27**
3. G2 Custodial Parent SUD	.07	.24**	--	-.07	.03	.06	-.01	-.10	-.11	.08	-.05
4. G2 Non-Latinx White Ethnicity	-.04	.26**	.04	--	-.15**	-.18**	-.04	-.25**	.13*	-.28**	-.42**
5. G3 Sex (Male)	-.08	-.04*	-.02	-.01	--	-.07	-.02	.03	-.12*	-.13*	-.04
6. G1 Grandmother-G2 Parent Support	-.19**	-.30**	-.06	-.16*	-.01	--	-.41**	.43**	-.04	.42**	.28**
7. G1 Grandmother-G2 Parent Stress	.32**	.17**	.10	-.13	-.06	-.29**	--	-.28**	.41**	.07	-.04
8. G1 Grandfather-G2 Parent Support	-.29**	-.20**	-.10	-.08	.07	.53**	-.18**	--	-.40**	.25**	.62**
9. G1 Grandfather-G2 Parent Stress	.29**	.08	-.02	-.30**	-.01	-.06	.48**	-.31**	--	.04	-.19**
10. G1 Grandmother-G3 Grandchild Closeness	.16*	-.01	.20**	-.29**	-.06	-.06	.20**	-.05	.18*	--	.55**
11. G1 Grandfather-G3 Grandchild Closeness	.05	-.25**	-.16*	-.30**	.11	.14	.02	.25**	.20**	.57**	--

Note: Correlations above the diagonal are for the maternal model, below the diagonal are for the paternal model. AUD = Alcohol Use Disorder. SUD = Substance Use Disorder. ** $p < .01$, * $p < .05$. G3 sex: 0=female, 1=male. G2 ethnicity: 0=Latinx, 1=Non-Latinx White.

Supplemental Table B. *Direct effects of predictors on mediators and outcomes: multiple group mediation*

	Maternal Grandparents			Paternal Grandparents			Difference Test
	β	SE	<i>p</i>	β	SE	<i>p</i>	95% CIs
G1 Grandfather-G3 Grandchild Closeness							
G1 Grandfather-G2 Parent Support	.586	.055	<.001***	.289	.065	<.001***	0.167, 0.454
G1 Grandfather-G2 Parent Stress	.084	.045	.062	.184	.088	.036*	-0.327, 0.154
G1 Grandparent AUD	.028	.054	.607	.091	.095	.338	-0.741, 0.402
G2 Parent Race/Ethnicity (White)	-.278	.059	<.001***	-.199	.087	.022*	-0.891, 0.216
G3 Grandchild Sex (Male)	-.075	.042	.070	.118	.069	.085	-0.965, -0.101
G2 Custodial Parent SUD	-.029	.051	.574	-.126	.085	.139	-0.368, 0.750
G1 Grandfather-G2 Parent Support							
G1 Grandparent AUD	-.081	.078	.257	-.202	.111	.070	-0.339, 0.659
G1 Grandparent Divorce	-.456	.082	<.001***	-.143	.124	.248	-1.640, -0.200
G1 Grandfather-G2 Parent Stress							
G1 Grandparent AUD	.036	.084	.672	.323	.088	<.001***	-0.908, -0.201
G1 Grandparent Divorce	.169	.092	.068	.066	.091	.469	-0.412, 0.598
G1 Grandmother-G3 Grandchild Closeness							
G1 Grandmother-G2 Parent Support	.373	.072	<.001***	.132	.054	.014*	0.120, 0.417
G1 Grandmother-G2 Parent Stress	.141	.064	.027*	.233	.081	.004**	-0.360, 0.166
G1 Grandparent AUD	-.058	.070	.405	.089	.090	.328	-1.001, 0.191
G2 Parent Race/Ethnicity (White)	-.233	.061	<.001**	-.181	.084	.032*	-0.637, 0.375
G3 Sex (Male)	-.152	.049	.002*	-.011	.064	.859	-0.771, 0.006
G3 Custodial Parent SUD	.056	.057	.334	.192	.077	.012*	-0.883, 0.114
G1 Grandmother-G2 Parent Support							
G1 Grandparent AUD	-.081	.086	.345	-.103	.112	.361	-0.251, 0.118
G1 Grandparent Divorce	-.089	.083	.288	-.255	.102	.012*	-0.154, 0.784
G1 Grandmother-G2 Parent Stress							
G1 Grandparent AUD	.211	.078	.006**	.257	.086	.003**	-0.484, 0.301
G1 Grandparent Divorce	.184	.085	.031*	.111	.133	.361	-0.526, 0.781

Note. In maternal grandparent model, parent (G2) is mother. In paternal grandparent model, parent (G2) is father. Difference test = maternal model effect – paternal model effect. Significant effects **bolded** for emphasis. *** $p < .001$, ** $p < .01$, * $p < .05$.

Supplemental Table C. *Mediation by G1-G2 stress and support: multiple group mediation*

	Maternal Grandparents			Paternal Grandparents			Difference Test
	β	SE	95% CIs	β	SE	95% CIs	95% CIs
G1 Grandfather-G3 Grandchild Closeness							
G1-G2 Stress	.009	.026	-0.029, 0.081	.157	.008	.014, .377	-0.359, -0.005
G1-G2 Support	-.151	.141	-0.459, 0.098	-.154	.100	-.371, .019	-0.320, 0.285
Total Indirect	-.142	.138	-0.449, 0.103	.003	.111	-.230, .195	-0.459, 0.157
TOTAL	-.062	.215	-0.516, 0.339	.245	.240	-.209, .737	-0.926, 0.279
G1 Grandmother-G3 Grandchild Closeness							
G1-G2 Stress	.076	.049	0.077, 0.194	.153	.079	.021, .337	-0.246, 0.076
G1-G2 Support	-.077	.092	-0.283, 0.069	-.035	.045	-.155, .031	-0.251, 0.118
Total Indirect	-.001	.089	-0.206, 0.158	.118	.084	-.061, .279	-0.341, 0.105
TOTAL	-.150	.223	-0.585, 0.324	.345	.217	-.077, .789	-1.159, 0.105

Note. Significant effects **bolded** for emphasis.

Supplemental Table D. *Direct effects of predictors on mediators and outcomes (grandchildren < age 12; maternal grandparent model)*

	β	SE	p
G1 Maternal Grandfather-G3 Grandchild Closeness			
G1 Grandfather-G2 Mother Support	.593	.068	<.001***
G1 Grandfather-G2 Mother Stress	.038	.061	.534
G1 Grandparent AUD	.039	.062	.528
G2 Mother Race/Ethnicity	-.287	.062	<.001***
G3 Sex	-.075	.048	.115
G1 Grandfather-G2 Mother Support			
G1 Grandparent AUD	-.102	.101	.313
G1 Grandparent Divorce	-.399	.104	<.001***
G1 Grandfather-G2 Mother Stress			
G1 Grandparent AUD	.089	.100	.372
G1 Grandparent Divorce	.234	.111	.035*
G1 Maternal Grandmother-G3 Grandchild Closeness			
G1 Grandmother-G2 Mother Support	.427	.067	<.001***
G1 Grandmother-G2 Mother Stress	.134	.076	.078
G1 Grandparent AUD	.042	.080	.603
G2 Mother Race/Ethnicity	-.235	.075	.002**
G3 Sex	-.154	.057	.007**
G1 Grandmother-G2 Mother Support			
G1 Grandparent AUD	.037	.095	.697
G1 Grandparent Divorce	-.093	.091	.308
G1 Grandmother-G2 Mother Stress			
G1 Grandparent AUD	.177	.093	.059
G1 Grandparent Divorce	.194	.101	.055

*** $p < .001$, ** $p < .01$, * $p < .05$

Supplemental Table E. *Mediation by G1-G2 stress and support (grandchildren < age 12; maternal grandparent model)*

	β	SE	95% BCa bootstrap CI	
			Lower	Upper
G1 Grandfather-G3 Grandchild Closeness				
G1-G2 Stress	.003	.010	-.008	.038
G1-G2 Support	-.060	.062	-.214	.045
Total Indirect	-.057	.062	-.194	.049
TOTAL	-.018	.085	-.185	.138
G1 Grandmother-G3 Grandchild Closeness				
G1-G2 Stress	.024	.020	.001	.082
G1-G2 Support	.016	.042	-.067	.090
Total Indirect	.040	.040	-.041	.118
TOTAL	.081	.088	-.098	.250

Supplemental Table F. *Direct effects of predictors on mediators and outcomes (grandchildren < age 12; paternal grandparent model)*

	β	SE	<i>p</i>
G1 Paternal Grandfather-G3 Grandchild Closeness			
G1 Grandfather-G2 Father Support	.241	.121	.047*
G1 Grandfather-G2 Father Stress	.175	.125	.162
G1 Grandparent AUD	.060	.114	.525
G2 Father Race/Ethnicity	-.204	.106	.0525
G1 Grandfather-G2 Father Support			
G1 Grandparent AUD	-.250	.120	.036*
G1 Grandparent Divorce	-.169	.126	.182
G1 Grandfather-G2 Father Stress			
G1 Grandparent AUD	.292	.124	.019*
G1 Grandparent Divorce	.087	.115	.450
G1 Paternal Grandmother-G3 Grandchild Closeness			
G1 Grandmother-G2 Father Support	-.036	.078	.640
G1 Grandmother-G2 Father Stress	.245	.090	.007*
G1 Grandparent AUD	.081	.103	.434
G2 Father Race/Ethnicity	-.224	.098	.023*
G1 Grandmother-G2 Father Support			
G1 Grandparent AUD	-.107	.123	.384
G1 Grandparent Divorce	-.228	.108	.034*
G1 Grandmother-G2 Father Stress			
G1 Grandparent AUD	.274	.107	.011*
G1 Grandparent Divorce	.131	.145	.366

*** $p < .001$, ** $p < .01$, * $p < .05$

Supplemental Table G. *Mediation by G1-G2 stress and support (grandchildren < age 12; paternal grandparent model)*

	β	SE	95% BCa bootstrap CI	
			Lower	Upper
G1 Grandfather-G3 Grandchild Closeness				
G1-G2 Stress	.051	.046	-.013	.169
G1-G2 Support	-.060	.049	-.180	.004
Total Indirect	-.009	.052	-.119	.085
TOTAL	.051	.110	-.171	.258
G1 Grandmother-G3 Grandchild Closeness				
G1-G2 Stress	.067	.038	.007	.160
G1-G2 Support	.004	.013	-.012	.044
Total Indirect	.071	.038	.007	.156
TOTAL	.152	.105	-.060	.345

Supplemental Table H. *Direct effects of predictors on mediators and outcomes (grandchildren age 12 and older; maternal grandparent model)*

	β	SE	<i>p</i>
G1 Maternal Grandfather-G3 Grandchild Closeness			
G1 Grandfather-G2 Mother Support	.538	.089	<.001***
G1 Grandfather-G2 Mother Stress	.187	.070	.007**
G1 Grandparent AUD	.018	.075	.812
G2 Mother Race/Ethnicity	-.312	.091	.001**
G1 Grandfather-G2 Mother Support			
G1 Grandparent AUD	.109	.111	.328
G1 Grandparent Divorce	-.428	.103	<.001***
G1 Grandfather-G2 Mother Stress			
G1 Grandparent AUD	-.023	.121	.853
G1 Grandparent Divorce	.041	.121	.734
G1 Maternal Grandmother-G3 Grandchild Closeness			
G1 Grandmother-G2 Mother Support	.545	.102	<.001***
G1 Grandmother-G2 Mother Stress	.329	.089	<.001***
G1 Grandparent AUD	-.171	.084	.042*
G2 Mother Race/Ethnicity	-.079	.099	.424
G1 Grandmother-G2 Mother Support			
G1 Grandparent AUD	-.070	.119	.556
G1 Grandparent Divorce	.061	.126	.630
G1 Grandmother-G2 Mother Stress			
G1 Grandparent AUD	.172	.110	.118
G1 Grandparent Divorce	.093	.120	.441

*** $p < .001$, ** $p < .01$, * $p < .05$

Supplemental Table I. *Mediation by G1-G2 stress and support (grandchildren age 12 and older; maternal grandparent model)*

	β	SE	95% BCa bootstrap CI	
			Lower	Upper
G1 Grandfather-G3 Grandchild Closeness				
G1-G2 Stress	-.004	.024	-.022	.033
G1-G2 Support	.059	.059	-.099	.085
Total Indirect	.054	.054	-.087	.091
TOTAL	.072	.091	-.088	.218
G1 Grandmother-G3 Grandchild Closeness				
G1-G2 Stress	.057	.042	.002	.087
G1-G2 Support	-.038	.066	-.109	.083
Total Indirect	.040	.050	-.061	.121
TOTAL	-.014	.084	-.168	.126

Note. Point est. = point estimate of the indirect effect; BCa bootstrap CI = Bias corrected and accelerated confidence intervals.

Supplemental Table J. *Direct effects of predictors on mediators and outcomes (grandchildren age 12 and older; paternal grandparent model)*

	β	SE	p
G1 Paternal Grandfather-G3 Grandchild Closeness			
G1 Grandfather-G2 Father Support	.367	.138	.008**
G1 Grandfather-G2 Father Stress	.352	.158	.026*
G1 Grandparent AUD	.066	.124	.592
G2 Father Race/Ethnicity	-.217	.124	.152
G3 Sex	.379	.098	<.001***
G2 Custodial Parent SUD	-.093	.124	.451
G1 Grandfather-G2 Father Support			
G1 Grandparent AUD	-.281	.149	.059
G1 Grandparent Divorce	-.135	.176	.443
G1 Grandfather-G2 Father Stress			
G1 Grandparent AUD	.267	.158	.090
G1 Grandparent Divorce	-.047	.128	.713
G1 Paternal Grandmother-G3 Grandchild Closeness			
G1 Grandmother-G2 Father Support	-.106	.144	.461
G1 Grandmother-G2 Father Stress	-.073	.197	.709
G1 Grandparent AUD	.036	.142	.800
G2 Father Race/Ethnicity	-.391	.145	.007**
G3 Sex	.033	.122	.786
G2 Custodial Parent SUD	.347	.127	.006**
G1 Grandmother-G2 Father Support			
G1 Grandparent AUD	-.248	.132	.061
G1 Grandparent Divorce	-.354	.123	.004**
G1 Grandmother-G2 Father Stress			
G1 Grandparent AUD	.334	.121	.006**
G1 Grandparent Divorce	.080	.163	.623

*** $p < .001$, ** $p < .01$, * $p < .05$

Supplemental Table K. *Mediation by G1-G2 stress and support (grandchildren age 12 and older; paternal grandparent model)*

	β	SE	95% BCa bootstrap CI	
			Lower	Upper
G1 Grandfather-G3 Grandchild Closeness				
G1-G2 Stress	.094	.077	-.008	-.290
G1-G2 Support	-.103	.071	-.282	-.001
Total Indirect	-.009	.083	-.168	.167
TOTAL	.057	.120	-.177	.296
G1 Grandmother-G3 Grandchild Closeness				
G1-G2 Stress	-.025	.069	-.223	.076
G1-G2 Support	.026	.049	-.035	.070
Total Indirect	.002	.076	-.170	.140
TOTAL	.038	.127	-.209	.286