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Direct and Indirect Effects of Brain Volume, Socioeconomic Status and Family Stress on Child IQ

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Abstract

Background: A large literature documents the detrimental effects of socioeconomic disparities on intelligence and neuropsychological development. Researchers typically measure environmental factors such as socioeconomic status (SES), using income, parent's occupation and education. However, SES is more complex, and this complexity may infuence neuropsychological outcomes.

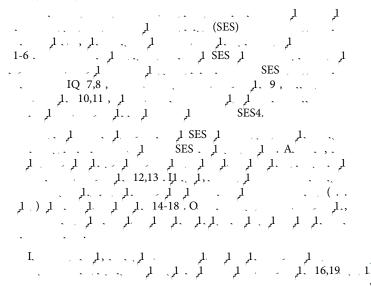
Methods: This study used principal components analysis to reduce 14 SES and 28 family stress indicators into their core dimensions (e.g. community and educational capital, fnancial resources, marital confict). Core dimensions were used in path analyses to examine their relationships with parent IQ and cerebral volume (white matter, grey matter and total brain volume), to predict child IQ in a sample of typically developing children.

Results: Parent IQ affected child IQ directly and indirectly through community and educational capital, demonstrating how environmental factors interact with familial factors in neuro-development. There were no intervening effects of cerebral white matter, grey matter, or total brain volume.

Conclusions: Findings may suggest that improving community resources can foster the intellectual development of children.

K 1 (SES); IQ; B 1 ; F

$L_{p=q}(\boldsymbol{\gamma}_{i})_{p=q}(\boldsymbol{I}_{i})$



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	Component				
Variable	Marital Confict-Physical	Depressive Symptoms	Marital Confict-Verbal	Marital Confict Resolution	Intrafamily Dyadic Relationships
Respondent slapped or spanked him/her ¹	.991	028	019	022	022
Respondent hit or tried to hit with something ¹	.991	021	058	012	018
Respondent pushed, grabbed, or shoved him/her ¹	.990	026	048	017	016
Respondent beat him/ her up1	.988	018	066	026	019
Respondent threw something at him/her ¹	.988	027	005	003	007
Respondent threw or smashed something ¹	.968	010	007	.038	023
Respondent threatened to hit or throw something at him/her ¹	.866	068	.193	.043	.003
Feeling blue ²	014	.783	.139	.035	.100
Feeling lonely ²	021	.777	.093	.121	109
Have you felt downhearted and blue? ³	.065	762	027	.027	007
Feeling hopeless about the future ²	010	.711	017	134	025
Thoughts of ending your life ²	.015	.623	055	143	055
Feelings of worthlessness ²	002	.617	117	.192	.107
Respondent called the person a name, insulted or swore at them ¹	.025	037	.852	.116	088
Respondent did or said something to spite him/her just to be mean ¹	024	.011	.799	123	104
Respondent yelled or screamed at him/her ¹	.015	.041	.782	.259	.067
Respondent sulked and/or refused to talk about it ¹	.094	005	.630	129	057
FES Confict Scale Index (score/ number answered) ⁴	086	.054	.489	.303	059
Respondent stomped out of room or house (or yard) ¹	.026	044	.440	.373	.338
Respondent discussed the issue calmly together ¹	.076	.043	059	.610	318
Respondent got information to back up their side of things ¹	.018	123	.217	.582	097

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(=.569, SE=.061, .<.001; =.207, SE=.070, .=.003 1 =.232, SE=.095, .=.015, ...).

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(=-.215, SE=.094, =.023).

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1 ..,1 . J. SES 1 , **, l** , , . -. - لم أ.لم لم -,1 , , , $(1) D \begin{bmatrix} 1 & 1 & 1 & 10 \\ 1 & 1 & 1 & 10 \\ 1 & 1 & 1 & 10 \\ 1 & 1 & 1 & 5ES \end{bmatrix}$ IQ? (2) D 1 SES 1 ••• ,1 ____1.' IQ _1 IQ? (3) D 1 .1 لم لم SES 1 IQ? 1 SES 1 1, . . 1 لر لر لر 1. 80.H J. ... J **, 1 پر 1** SES 1 IQ; . 1. 1. 1. ,1 IQ, ,1 . لم IQ, لم لم لم . SES 46.A 1 . . . 1. <u>ل</u>ر . 1. . ,1 ,1 IQ. . <u>1</u> . 1 <u>,</u>1. . ,1 ا لم لم . . . , • ل ل . ل . C 1 <u>,</u>1 لم , . لم . . <u>1</u>1. , , , . 1 , ____1 , , **.** 0.

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