
We examine the heritability of psychological resilience among US adults aged 25 to 74 years. Using monozygotic and dizygotic twin pairs from the National Survey of Mid-Life Development in the United States (MIDUS), we show that polygenic effects are heritable among men ($h^2 = .60$) and women ($h^2 = .59$). We then estimate the heritability of polygenic effects after controlling for an individual's social and interpersonal resources, and the operationalizability of the resilience phenotype. According to this specification, the heritability of resilience is higher among men ($h^2 = .52$) compared to women ($h^2 = .38$). We show that self-acceptance is one of the most important aspects of psychological functioning that accounts for the heritability of resilience among both men and women. However, compared to women, men appear to derive additional benefits from environmental factors that are not heritable.

Table 1

Descriptive Statistics for all Variables Used in the Analysis

| | Male | Female | Male | Female |
|-----------------|---------------|---------------|-----------------|-----------------|
| | MZ | DZ | MZ | DZ |
| Positive Affect | 0.02 (.97) | 0.10 (.94) | -0.01 (1.02) | -0.08 (1.05) |

Demographic controls

Table 2

Defining Life Resilience Estimates Among Same Sex MZ and DZ Twin Pairs: The Heritability of Resilience By Sex

| | Men | | Women | |
|-------------------------------|-----------------|-------------------|------------------|-------------------|
| | Model 1 | Model 2 | Model 3 | Model 4 |
| Twin 2 score (T2) | 0.08 (0.09) | 0.04 (0.08) | 0.18+ (0.10) | 0.07 (0.08) |
| Genetic association (G) | -0.24 (0.16) | -0.30+ (0.16) | -0.06 (0.13) | 0.01 (0.14) |
| T2 * G (H2) | 0.60* (0.23) | 0.52* (0.21) | 0.59* (0.24) | 0.38* (0.19) |
| High spouse strain | | -0.19 (0.11) | | -0.35** (0.10) |
| Children strain | | -0.05 (0.03) | | -0.04+ (0.02) |
| Has a child | | 0.29* (0.15) | | 0.01 (0.13) |
| Parent strain | | 0.00 (0.04) | | -0.06* (0.02) |
| Job strain | | -0.04 (0.08) | | -0.19* (0.08) |
| Job support | | 0.13+ (0.07) | | 0.16* (0.08) |
| Friend/family strain | | -0.27** (0.09) | | -0.07 (0.10) |
| Friend/family support | | 0.26** (0.08) | | 0.37** (0.09) |
| Financial strain | | -0.13* (0.06) | | -0.09+ (0.05) |
| Negative health | | -0.31** (0.07) | | -0.30** (0.07) |
| Childhood SES | | -0.11+ (0.06) | | 0.00 (0.05) |
| Perceived neighborhood health | | 0.15+ (0.09) | | 0.17* (0.09) |
| Constant | 0.40* (0.16) | -0.94 (0.69) | 0.40** (0.14) | -1.80** (0.60) |
| R-squared | 0.10 | 0.32 | 0.16 | 0.39 |

Note: ** $p < .01$, * $p < .05$, + $p < .10$. Cell entries represent unstandardized regression coefficients with standard errors in parentheses. Models 2 and 4 include controls for sociodemographic characteristics (e.g., age, marital status, employment status, and education), controls for the health environment assumption, and a dummy variable indicating if any sociodemographic covariates were imputed. All data come from the twin sample of the National Survey of Midlife Development in the United States (MIDUS), 1995-1996 (Brim et al., 1996). A total of 527 twin pairs were included in these analyses (MZm(129); MZf(155); DZm(104); DZf(139)).

β_1 β_2 β_3 β_4 β_5 β_6 β_7 β_8 β_9 β_{10} β_{11} β_{12} β_{13} β_{14} β_{15} β_{16} β_{17} β_{18} β_{19} β_{20} β_{21} β_{22} β_{23} β_{24} β_{25} β_{26} β_{27} β_{28} β_{29} β_{30} β_{31} β_{32} β_{33} β_{34} β_{35} β_{36} β_{37} β_{38} β_{39} β_{40} β_{41} β_{42} β_{43} β_{44} β_{45} β_{46} β_{47} β_{48} β_{49} β_{50} β_{51} β_{52} β_{53} β_{54} β_{55} β_{56} β_{57} β_{58} β_{59} β_{60} β_{61} β_{62} β_{63} β_{64} β_{65} β_{66} β_{67} β_{68} β_{69} β_{70} β_{71} β_{72} β_{73} β_{74} β_{75} β_{76} β_{77} β_{78} β_{79} β_{80} β_{81} β_{82} β_{83} β_{84} β_{85} β_{86} β_{87} β_{88} β_{89} β_{90} β_{91} β_{92} β_{93} β_{94} β_{95} β_{96} β_{97} β_{98} β_{99} β_{100}

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A. 1 - A

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| M a | A . a | Q - e s t i o n | Range |
|---|-------|---|-----------|
| Spo - sal S t a i n | | | |
| In 7 he pa s 12 mo n 7 h s ha s ya s po - se had: | | | |
| SM21A_1 | | A chro nic di sea se o di sabi l 7 y | Ye s / No |
| SM21B_1 | | A he l e r n 7 mi no il ne s s | Ye s / No |
| SM21C_1 | | Emo 7 i on al p o b l e m s | Ye s / No |
| SM21D_1 | | Alcohol o s 7 b 7 s a n c e a b - s e p o b l e m s | Ye s / No |
| SM21E_1 | | Fi na n c i a l p o b l e m s | Ye s / No |
| SM21F_1 | | P o b l e m s a t wo k o s c h o o l | Ye s / No |
| SM21G_1 | | A p o b l e m f i n d i n g o k e e p i n g a j o b | Ye s / No |
| SM21H_1 | | M a 7 i a l o p a 7 n o r e l a 7 i o n s h i p p o b l e m s | Ye s / No |
| SM21I_1 | | Legal p o b l e m s | Ye s / No |
| SM21J_1 | | Diffi c 7 y ge 7 i n g a l o n g w i t h p e o p l e | Ye s / No |
| Child S t a i n | | | |
| In 7 he pa s 12 mo n 7 h s ha s a n y o f y a s c h i l d e n h a d: | | | |
| SM21A_3 | | A chro nic di sea se o di sabi l 7 y | Ye s / No |
| SM21B_3 | | A he l e r n 7 mi no il ne s s | Ye s / No |
| SM21C_3 | | Emo 7 i on al p o b l e m s | Ye s / No |
| SM21D_3 | | Alcohol o s 7 b 7 s a n c e a b - s e p o b l e m s | Ye s / No |
| SM21E_3 | | Fi na n c i a l p o b l e m s | Ye s / No |
| SM21F_3 | | P o b l e m s a t wo k o s c h o o l | Ye s / No |
| SM21G_3 | | A p o b l e m f i n d i n g o k e e p i n g a j o b | Ye s / No |
| SM21H_3 | | M a 7 i a l o p a 7 n o r e l a 7 i o n s h i p p o b l e m s | Ye s / No |
| SM21I_3 | | Legal p o b l e m s | Ye s / No |
| SM21J_3 | | Diffi c 7 y ge 7 i n g a l o n g w i t h p e o p l e | Ye s / No |
| P a e n t S t a i n | | | |
| In 7 he pa s 12 mo n 7 h s ha v e y a s p a e n t s o 7 he p e o p l e w h o a i s e d y a - h a d: | | | |
| SM21A_2 | | A chro nic di sea se o di sabi l 7 y | Ye s / No |
| SM21B_2 | | A he l e r n 7 mi no il ne s s | Ye s / No |
| SM21C_2 | | Emo 7 i on al p o b l e m s | Ye s / No |
| SM21D_2 | | Alcohol o s 7 b 7 s a n c e a b - s e p o b l e m s | Ye s / No |
| SM21E_2 | | Fi na n c i a l p o b l e m s | Ye s / No |
| SM21F_2 | | P o b l e m s a t wo k o s c h o o l | Ye s / No |
| SM21G_2 | | A p o b l e m f i n d i n g o k e e p i n g a j o b | Ye s / No |
| SM21H_2 | | M a 7 i a l o p a 7 n o r e l a 7 i o n s h i p p o b l e m s | Ye s / No |

| Ma Item(s) | A. ا (CONTINUED) Q-e-shon | Range |
|--|---|--|
| Job S-ppol — alpha = .83 | | |
| SI30A | How of en do ya -ge' help and s-ppol' lom ya -cowokos? | 1 (All' he' ime)-5 (Neve) |
| SI30C | How of en do ya -ge' he inform'ion ya -need lom ya -s-ppol'os? | 1 (All' he' ime)-5 (Neve) |
| SI30D | How of en do ya -ge' help and s-ppol' lom ya -immediate s-ppol'os? | 1 (All' he' ime)-5 (Neve) |
| SI30E | How of en i; ya -immediate s-ppol'os willing 'o li-shen' o ya -work related problem? | 1 (All' he' ime)-5 (Neve) |
| Negative health s'at-s — alpha = .76 | | |
| BADL | Basic Ac'iv'ity of Daily Living — Scale based on SA17B & SA17G. (N-amba: Mean Response Missing) | 1 (A lo')-4 (No' a' all) |
| | How m-ch doe s-ya -heaf' h limit' ya -in doing: Ba' hing o -che-sing ya -self? | 1 (A lo')-4 (No' a' all) |
| | How m-ch doe s-ya -heaf' h limit' ya -in doing: Walking one block | 1 (A lo')-4 (No' a' all) |
| IADL | In' o-media' e ac'iv'ity of daily living. Mean response of SA17A, SA17C, SA17D, SA17E, SA17F, SA17H, SA17I | 1 (A lo')-4 (No' a' all) |
| | How m-ch doe s-ya -heaf' h limit' ya -in doing: | 1 (A lo')-4 (No' a' all) |
| | Lif'ing o -cay'ing o -ocies | 1 (A lo')-4 (No' a' all) |
| | Climbing several flight's of 'ais | 1 (A lo')-4 (No' a' all) |
| | Bending, kneeling, o -'oo'ping | 1 (A lo')-4 (No' a' all) |
| | Walking more' han a mile | 1 (A lo')-4 (No' a' all) |
| | Walking several block's | 1 (A lo')-4 (No' a' all) |
| QA4 | Vig' o -s-ac'iv'ity (e.g., m-ning, lif'ing heavy object') | 1 (A lo')-4 (No' a' all) |
| | Moderate ac'iv'ity (e.g., bowling, vaol-ning) | 1 (A lo')-4 (No' a' all) |
| | Overallo'ing of physical health | 1 (Poo)-5 (Excellent') |
| CHRONIC | N-amba of chronic condition reported in SA9A-SA9CC: In' he pas' 12 month's have ya -experienced o -be'ed fo -any of' he following? A'shma, bronchit'is, o -emphy'semai'os; T-ba' o -Jo's; H'snia o -m-pl'ae; O' ha -L-ing o -blem's; Pile's; o -hem' o -hold's; A' h'i -ha -na' i -sm, o' ha -bone o -join' di'se's; Scia'ica, L-mbago, o -ea -ing backache; P'o -s' ent' -kin -o -ble (e.g., eczema); h'yp'oid di'se's; hay'fev'os; o -ea -ing s'omach -o -ble, indigest'ion o -diab'ea; u -ing o -bladder's; being con's'ipat'ed all o -mo's of' he' ime; gallbladder -o -ble; p'o -s' ent' fo' -o -ble (e.g., b -tion's, in -own' o -enail's); -o -ble w' h va'ico'se vein's; eH -ing medical' e'ea' men'; AIDS o - HIV infec'ion; L -s -o o' ha -a -oimm -nedi'os; p'o -s' ent' -o -ble w' h ya -g -m's; o -ma -h; p'o -s' ent' -o -ble w' h ya -e' h; high blood p'e -s -e o -hyp'ert'ension; anxie'y, de'p'e'ssion, o -some o' ha -emo'ional di'se's; alcohol o -u -g o -blem's; mig'aine headache's; chronic sleeping problem's; diab'e's; o -high blood t -g'os; m -j'iple -s -o -s, epilep'sy, o -o' ha -na -ological di'se's; o -oke | Yes/ No |
| | Financial strain — alpha = .83 | |
| SJ1 | How wa -d ya -a' e ya -financial s'at'ion' he s' day's? | 0 (W'o -s) -10 (Be's) |
| SJ6 | In general, wa -d ya -s'ay ya -and ya -family living w' h ya -have more many' han ya -need, j -s' -e'na -gh money fo -ya -need's, o -no' -e'na -gh money fo -ya -need's? | 1 (More money); 2 (J -s' -e'na -gh); 3 (No' -e'na -gh) |
| SJ7 | How diffia -j' i -s' i' fo -ya -(and ya -family) 'o pay ya -monthly expen'se's? | 1 (Very diffia -j) -4 (No' a' all diffia -j) |
| Perceived neighborhood health — alpha = .88 | | |
| | Please indicate how m-ch each of' he following s'at'ement's describe ya -s'at'ion. | |
| SL5A | 'I feel safe being o - alone in my neighborhood during' he day'ime.' | 1 (A lo')-4 (No' a' all) |
| SL5B | 'I feel safe being o - alone in my neighborhood at' night.' | 1 (A lo')-4 (No' a' all) |

M a A. a (CONTINUED)

| Item(s) | Question | Range |
|----------|---|---|
| | Perceived neighborhood healthiness — alpha = .68 | |
| SL5E | I could call on a neighbor for help if I needed it. | 1 (A lot)–4 (Not at all) |
| SL5G | People in my neighborhood help each other. | 1 (A lot)–4 (Not at all) |
| | Childhood SES — alpha = .79 | |
| SE9 | When you were growing up, was your family better off financially than the average family was at that time? | 1 (A lot better off)–7 (A lot worse off) |
| M_TSEI80 | Most had occupational training | |
| D_TSEI80 | Father had occupational training | |
| QC2 | Father had educational attainment: 1 (No school / Some grade school), 2 (8th grade / Junior high school), 3 (Some high school), 4 (GED), 5 (Graduated from high school), 6 (1–2 years college—no degree yet), 7 (3+ years college—No degree yet), 8 (Associate/vocational degree), 9 (Bachelor degree), 10 (Some graduate school), 11 (Master's degree), 12 (PhD or higher professional degree) | 1 (No school / Some grade school) 12 (PhD or higher professional degree) |
| QC8 | Most had educational attainment | |

