

INTERNALIZING AND RSB

Supplementary Table 1. Phenotypic correlations, by sex, for Study 1 (CO Sample) with 95% CIs.

	Num. of Partners	Age at F.S.	Depression	Neuroticism	Self-esteem
Num. of Partners	1	-0.31* [-0.38, -0.24]	0.16* [0.08, 0.24]	0.16* [0.08, 0.23]	0.05 [-0.03, 0.13]
Age at F.S.	-0.31* [-0.38, 0.23]	1	-0.12* [-0.19, -0.05]	-0.15* [-0.22, -0.08]	-0.07 [-0.14, 0.01]
Depression	0.04 [-0.04, 0.13]	-0.11* [-0.18, -0.03]	1	0.57* [0.53, 0.61]	0.56* [0.52, 0.59]
Neuroticism	0.01 [-0.08, 0.09]	-0.02 [-0.10, 0.06]	0.52* [0.47, 0.56]	1	0.46* [0.42, 0.50]
Self-esteem	0.03 [-0.06, 0.11]	-0.12* [-0.20, -0.04]	0.56* [0.52, 0.60]	0.39* [0.34, 0.44]	1

Female estimates shown on the upper diagonal, male estimates shown on the lower diagonal in bold. Depression = depressive symptom count. * significant at alpha = .05. 95% CI shown in brackets. Age at first sex was not reversed when computing the correlations.

INTERNALIZING AND RSB

Supplementary Table 2. 95% confidence intervals for Figure 1 parameter estimates.

Males		
Path	Path Estimate	95% CI
Correlation: INT, RSB	0.13	[0.07, 0.18]
Loading: Depression on INT	0.77	[0.68, 0.86]
Loading: Neuroticism on INT	0.64	[0.59, 0.68]
Loading: Self-esteem on INT	0.74	[0.71,0.77]
Loading: Num. Part. on RSB	0.60	[0.54,0.66]
Loading: Age at F.S. on RSB	0.66	[0.61, 0.71]
Females		
Path	Path Estimate	95% CI
Correlation: INT, RSB	0.30	[0.24, 0.36]
Loading: Depression on INT	0.78	[0.74, 0.82]
Loading: Neuroticism on INT	0.74	[0.69, 0.79]
Loading: Self-esteem on INT	0.63	[0.60, 0.66]
Loading: Num. Part. on RSB	0.56	[0.53, 0.59]
Loading: Age at F.S. on RSB	0.65	[0.57, 0.71]

Path estimates shown with their corresponding 95% CIs.

Supplementary Table 3. Model comparisons for multivariate twin analyses in Study 1 (CO Sample).

Consistent across sex

Model	Comp.	χ^2	df	AIC	$\Delta \chi^2$	Δ df	Diff. Test p-value
1. ACE	--	275.95	263	11913.56	--	--	--
2. AE	1 vs. 2	283.59	273	11941.01	7.64	10	.66
3. CE	1 vs. 3	295.51	273	11994.63	19.56	10	.03
4. E only	1 vs. 4	459.28	280	12102.70	183.33	17	<.001

Nested sub-models indicated an AE model as the best fit. Comp. = model comparison performed; Diff. Test p-value = p-value obtained from Chi-square difference test. Value above .05 suggests the model is not a worse fit compared to full model. ACE = full model; AE = A and E cross paths for both sexes; CE = C and E cross paths for both sexes; E only = E cross path only for both sexes.

INTERNALIZING AND RSB

Supplementary Table 4. 95% confidence intervals for Figure 2 parameter estimates.

Males

Path	Path Estimate	95% CI
Correlation: Genetic correlation	0.454	[0.35, 0.56]
Correlation: Nonshared environ. correlation	0.156	[-0.07, 0.32]
Loading: Depression on INT	0.81	[0.76, 0.85]
Loading: Neuroticism on INT	0.66	[0.64, 0.67]
Loading: Self-esteem on INT	0.67	[0.63, 0.70]
Loading: Num. Part. on RSB	0.59	[0.51, 0.68]
Loading: Age at F.S. on RSB	0.65	[0.59, 0.71]
Path: A on INT	0.738	[0.69, 0.79]
Path: E on INT	0.675	[0.62, 0.73]
Path: A on RSB	0.592	[0.55, 0.64]
Path: E on RSB	0.738	[0.71, 0.76]
Residual: A on Depression	0.00	[-0.12, 0.12]
Residual: E on Depression	0.589	[0.51, 0.67]
Residual: A on Neuroticism	0.116	[-0.06, 0.25]
Residual: C on Neuroticism	0.314	[0.27, 0.35]
Residual: E on Neuroticism	0.676	[0.63, 0.71]
Residual: A on Self-esteem	0.118	[-0.03, 0.25]
Residual: D on Self-esteem	0.475	[-0.01, 0.78]
Residual: E on Self-esteem	0.555	[0.50, 0.60]
Residual: A on Num. Part.	0.551	[0.49, 0.61]
Residual: D on Num. Part.	0.334	[-0.10, 0.68]
Residual: E on Num. Part.	0.483	[0.21, 0.69]
Residual: A on Age at F.S.	0.143	[-0.12, 0.40]
Residual: C on Age at F.S.	0.552	[0.48, 0.62]
Residual: E on Age at F.S.	0.498	[0.45, 0.54]

Females

Path	Path Estimate	95% CI
Correlation: Genetic correlation	0.636	[0.58, 0.70]
Correlation: Nonshared environ. correlation	0.104	[-0.23, 0.41]
Loading: Depression on INT	0.82	[0.81, 0.83]
Loading: Neuroticism on INT	0.70	[0.66, 0.75]
Loading: Self-esteem on INT	0.69	[0.66, 0.72]
Loading: Num. Part. on RSB	0.62	[0.58, 0.66]
Loading: Age at F.S. on RSB	0.63	[0.60, 0.66]
Path: A on INT	0.716	[0.61, 0.82]
Path: E on INT	0.698	[0.58, 0.80]
Path: A on RSB	0.41	[-0.02, 0.83]
Path: C on RSB	0.605	[-0.03, 0.99]
Path: E on RSB	0.59	[0.45, 0.74]
Residual: A on Depression	0.001	[-0.31, 0.30]
Residual: D on Depression	0.29	[-0.13, 0.44]
Residual: E on Depression	0.494	[0.39, 0.59]

INTERNALIZING AND RSB

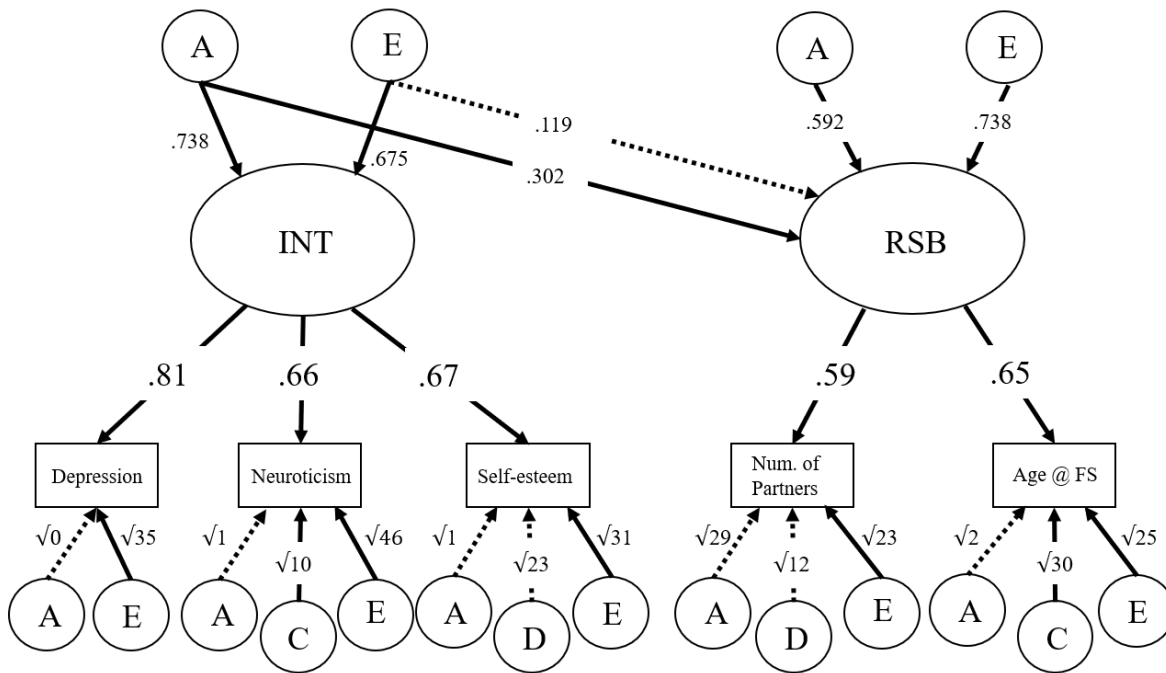
Residual: A on Neuroticism	0.412	[0.35, 0.46]
Residual: E on Neuroticism	0.587	[0.51, 0.66]
Residual: A on Self-esteem	0.048	[-0.22, 0.10]
Residual: D on Self-esteem	0.359	[-0.08, 0.69]
Residual: E on Self-esteem	0.628	[0.59, 0.66]
Residual: A on Num. Part.	0.095	[-0.33, 0.39]
Residual: C on Num. Part.	0.588	[0.52, 0.64]
Residual: E on Num. Part.	0.508	[0.49, 0.53]
Residual: A on Age at F.S.	0.076	[-0.09, 0.19]
Residual: C on Age at F.S.	0.607	[0.55, 0.66]
Residual: E on Age at F.S.	0.48	[0.46, 0.50]

Path estimates shown with corresponding 95% CIs.

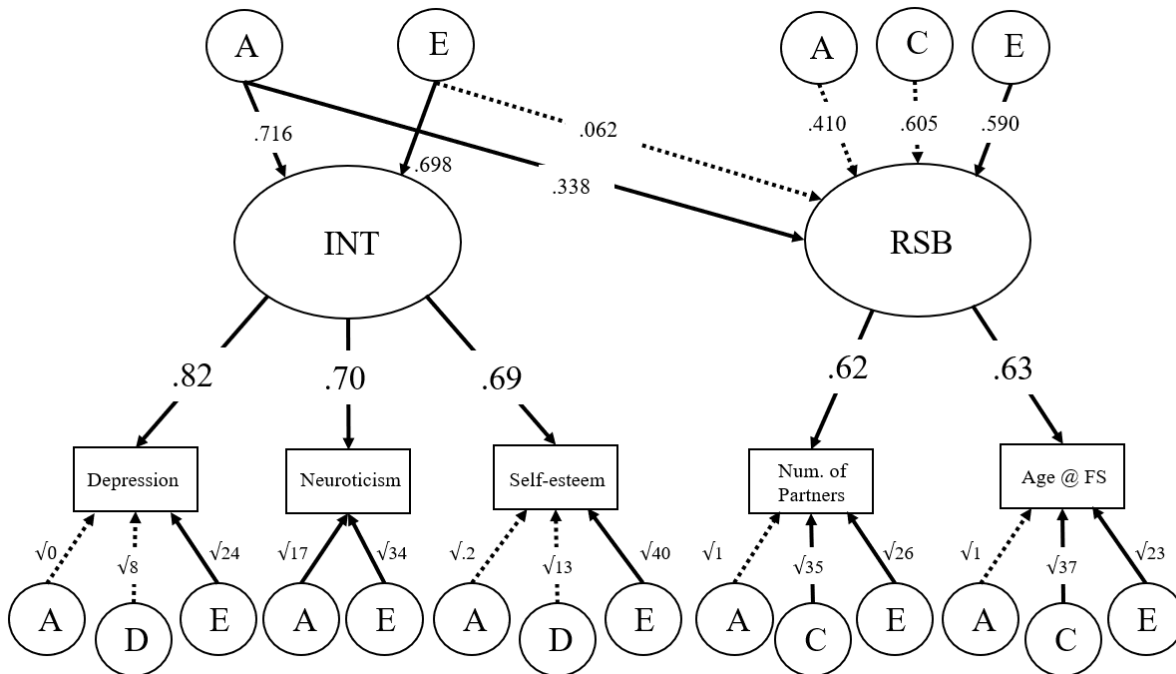
INTERNALIZING AND RSB

Supplementary Figure 1. Five-group sex-limitation Cholesky decomposition, with cross paths.

A) Males



B) Females



Supplementary Figure 1 Caption: Panel A) Males. Panel B) Females. Standardized estimates shown.

Significant paths shown with solid arrows; non-significant paths shown with dotted arrows. Residual A, C, D,

INTERNALIZING AND RSB

and E influences path coefficients are written as the square root of the variances. Fit: $\chi^2(273) = 283.589$, $p = .3171$, RMSEA = 0.012, CFI = 0.996, AIC = 11941.006.

INTERNALIZING AND RSB

Supplementary Table 5. Phenotypic correlations, by sex, for Study 2 (MN Sample) with 95% CIs.

	Num. of Partners	Age at F.S.	MDD	Alienation	Stress Reaction
Num. of Partners	1	-0.40* [0.33, 0.46]	0.09* [0.01, 0.17]	0.09* [0.01, 0.17]	-0.03 [-0.11, 0.05]
Age at F.S.	-0.48* [0.40, 0.54]	1	-0.06 [-0.14, 0.02]	-0.14* [-0.22, -0.06]	-0.05 [-0.13, 0.03]
MDD	0.03 [-0.06, 0.11]	-0.07 [-0.16, 0.02]	1	0.19* [0.11, 0.27]	0.40* [0.33, 0.46]
Alienation	0.07 [-0.02, 0.16]	-0.16* [-0.25, -0.07]	0.18* [0.09, 0.26]	1	0.53* [0.47, 0.59]
Stress Reaction	0.01 [-0.08, 0.10]	-0.06 [-0.15, 0.03]	0.32* [0.23, 0.39]	0.58* [0.51, 0.63]	1

Female estimates shown on the upper diagonal, male estimates shown on the lower diagonal in bold. Starred estimates are significant at alpha = .05. 95% CI shown in brackets. Age at first sex was not reversed when computing the correlations.

INTERNALIZING AND RSB

Supplementary Table 6. 95% confidence intervals for Figure 3 parameter estimates.

Males		
Path	Path Estimate	95% CI
Correlation: INT, RSB	0.14	[0.11, 0.17]
Loading: Alienation on INT	0.73	[0.68, 0.78]
Loading: Stress Reaction on INT	0.73	[0.69, 0.77]
Loading: Num. Part. on RSB	0.79	[0.77, 0.80]
Loading: Age at F.S. on RSB	0.79	[0.77, 0.81]
Females		
Path	Path Estimate	95% CI
Correlation: INT, RSB	0.11	[0.05, 0.17]
Loading: Alienation on INT	0.74	[0.71, 0.77]
Loading: Stress Reaction on INT	0.74	[0.70, 0.78]
Loading: Num. Part. on RSB	0.63	[0.58, 0.68]
Loading: Age at F.S. on RSB	0.63	[0.60, 0.66]

Path estimates shown with corresponding 95% CIs.

INTERNALIZING AND RSB

Supplementary Table 7. 95% confidence intervals for Figure 4 parameter estimates.

Males

Path	Path Estimate	95% CI
Correlation: Genetic correlation	0.151	[-0.09, 0.27]
Correlation: Nonshared environ. correlation	0.172	[-0.03, 0.31]
Loading: Alienation on INT	0.68	[0.61, 0.77]
Loading: Stress Reaction on INT	0.65	[0.61, 0.69]
Loading: Num. Part. on RSB	0.74	[0.68, 0.80]
Loading: Age at F.S. on RSB	0.76	[0.72, 0.80]
Path: A on INT	0.779	[0.76, 0.82]
Path: E on INT	0.629	[0.59, 0.65]
Path: A on RSB	0.773	[0.70, 0.83]
Path: E on RSB	0.614	[0.59, 0.63]
Residual: A on Alienation	0.001	[-0.24, 0.23]
Residual: D on Alienation	0.00	[-0.21, 0.21]
Residual: E on Alienation	0.734	[0.68, 0.77]
Residual: A on Stress Reaction	0.00	[-0.12, .12]
Residual: C on Stress Reaction	0.00	[-0.19, 0.19]
Residual: E on Stress Reaction	0.76	[0.73, 0.79]
Residual: A on Num. Part.	0.001	[-0.05, 0.05]
Residual: D on Num. Part.	0.238	[-0.06, 0.42]
Residual: E on Num. Part.	0.633	[0.58, 0.69]
Residual: A on Age at F.S.	0.404	[-0.01, 0.51]
Residual: C on Age at F.S.	0.102	[-0.05, 0.19]
Residual: E on Age at F.S.	0.498	[0.36, 0.60]

Females

Path	Path Estimate	95% CI
Correlation: Genetic correlation	0.149	[-0.05, 0.19]
Correlation: Nonshared environ. correlation	0.15	[-0.06, 0.20]
Loading: Alienation on INT	0.65	[0.61, 0.69]
Loading: Stress Reaction on INT	0.63	[0.58, 0.68]
Loading: Num. Part. on RSB	0.68	[0.66, 0.70]
Loading: Age at F.S. on RSB	0.64	[0.59, 0.68]
Path: A on INT	0.937	[0.89, 0.98]
Path: E on INT	0.35	[0.31, 0.38]
Path: A on RSB	0.795	[0.65, 0.88]
Path: E on RSB	0.588	[0.52, 0.63]
Residual: A on Alienation	0.104	[-0.15, 0.23]
Residual: D on Alienation	0.14	[-0.09, 0.21]
Residual: E on Alienation	0.737	[0.71, 0.75]
Residual: A on Stress Reaction	0.00	[-0.05, 0.05]
Residual: C on Stress Reaction	0.00	[-0.10, 0.09]
Residual: E on Stress Reaction	0.777	0.59, 0.91]
Residual: A on Num. Part.	0.002	[-0.19, 0.17]
Residual: D on Num. Part.	0.235	[-0.02, 0.51]

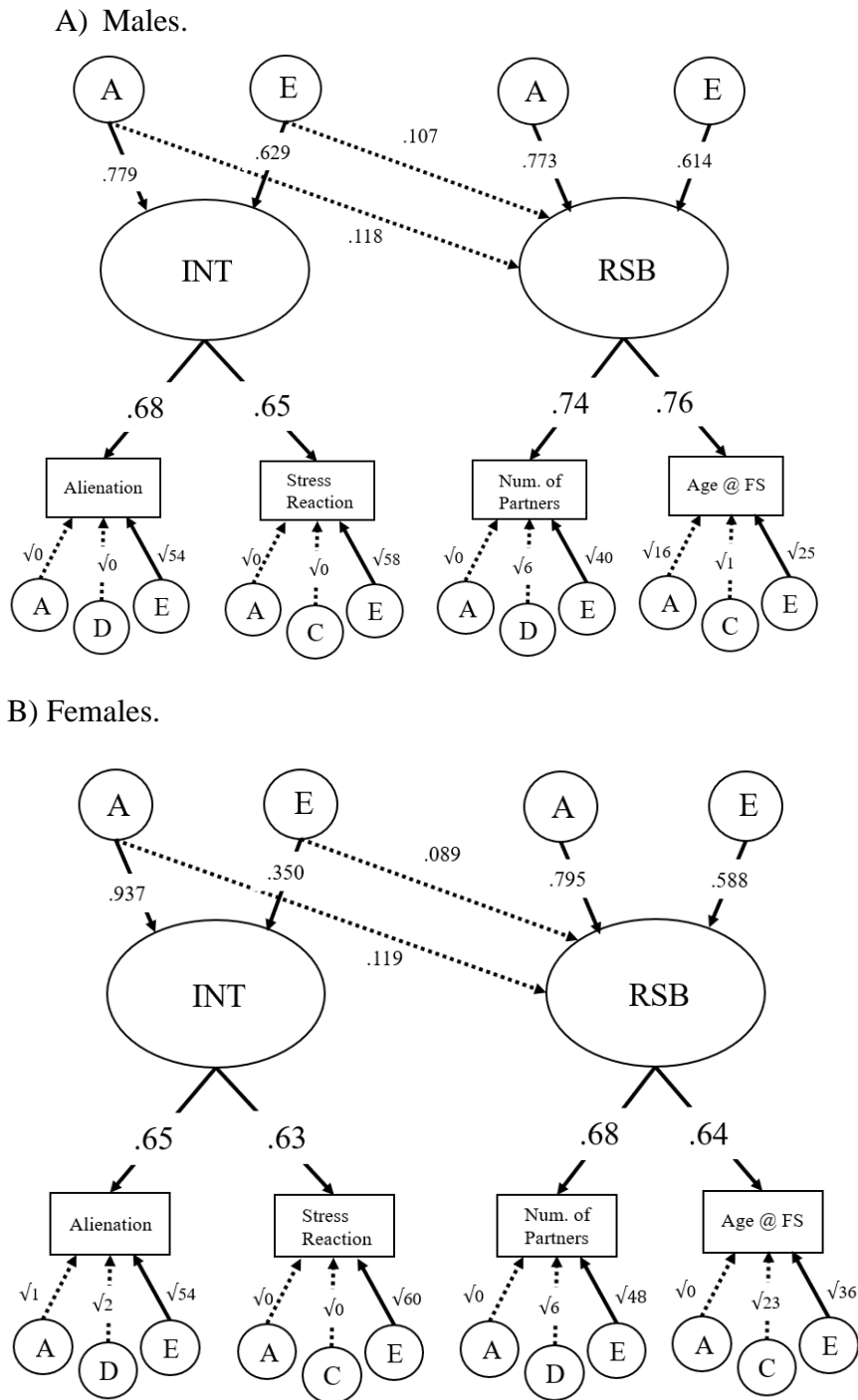
INTERNALIZING AND RSB

Residual: E on Num. Part.	0.696	[0.64, 0.73]
Residual: A on Age at F.S.	0.003	[-0.22, 0.18]
Residual: C on Age at F.S.	0.48	[-0.01, 0.68]
Residual: E on Age at F.S.	0.60	[0.52, 0.68]

Path estimates shown with corresponding 95% CIs.

INTERNALIZING AND RSB

Supplementary Figure 2. Four-group bivariate Cholesky decomposition, with cross paths.



Supplementary Figure 2 Caption: Panel A) Males. Panel B) Females. Standardized estimates given.

Significant paths shown with solid arrows; non-significant paths shown with dotted arrows. Residual A, C, D, and E influences path coefficients are written as the square root of the variances. Fit: $\chi^2(132) = 620.711$, $p = .000$, RMSEA = 0.155, CFI = 0.509, AIC = 11978.97.

INTERNALIZING AND RSB

Supplementary Table 8. Model comparisons for multivariate twin analyses in Study 2 (MN Sample).

Consistent across sex

Model	Comp.	χ^2	df	AIC	$\Delta \chi^2$	Δ df	Diff. Test p-value
1. AE	--	620.71	132	11978.97	--	--	--
2. A only	1 vs. 2	621.96	134	11976.23	1.25	2	.53
3. E only	1 vs. 3	623.57	134	11977.84	2.86	2	.24

Differs across sex

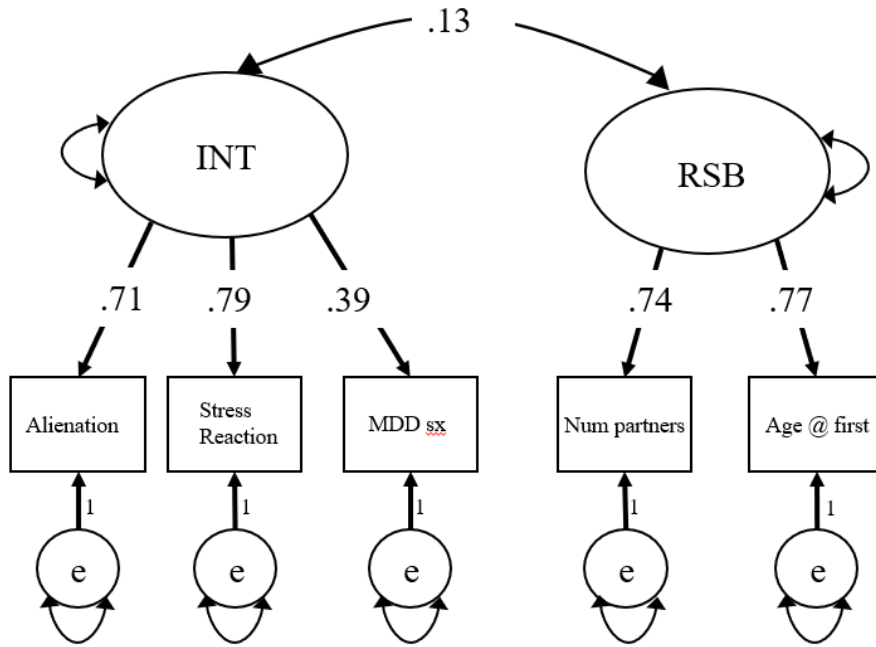
Model	Comp.	χ^2	df	AIC	$\Delta \chi^2$	Δ df	Diff. Test p-value
4. AEm	1 vs. 4	624.39	134	11978.66	2.86	2	.16
5. AEf	1 vs. 5	625.79	134	11980.06	5.08	2	.08

Nested sub-models failed to definitively parse apart genetic and environmental variance components underlying the significant phenotypic correlation. Comp. = model comparison performed; Diff. Test p-value = p-value obtained from Chi-square difference test. Value above .05 suggests the model is not a worse fit compared to full model. AE = A and E cross paths for both sexes, full model; A only = A cross path only for both sexes; E only = E cross path only for both sexes; AEm = AE cross paths for males, no cross paths for females; AEf = AE cross paths for females, no cross paths only for males.

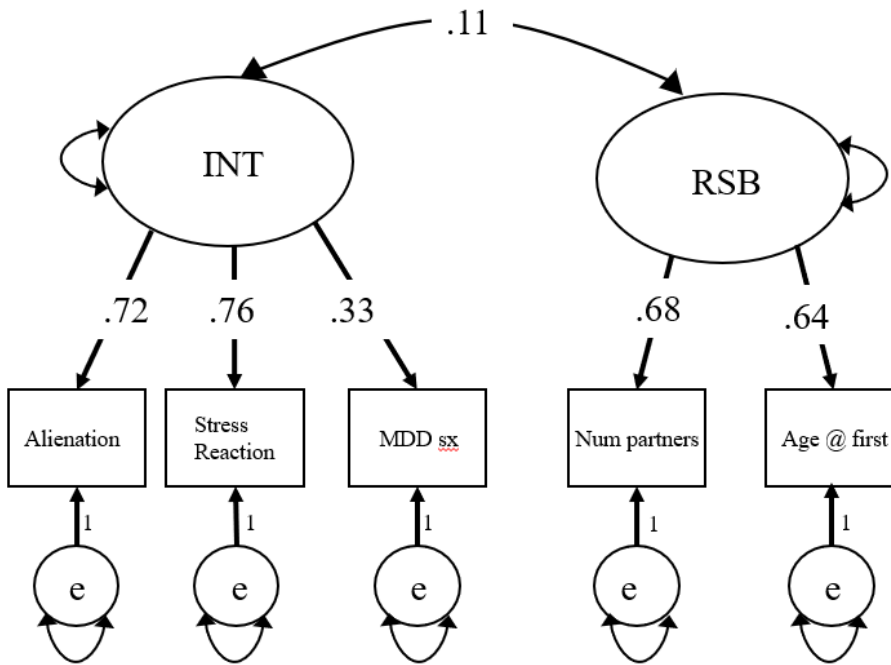
INTERNALIZING AND RSB

Supplementary Figure 3. Multigroup phenotypic confirmatory factor analysis for Study 2, separated by sex and including MDD indicator on INT.

A) Males



B) Females



INTERNALIZING AND RSB

Supplementary Figure 3 Caption. Panel A) Males. Panel B) Females. Standardized estimates shown. In order to estimate the correlations between the latent factors, the measurement models (raw factor loadings) were constrained to be equal across males and females. Latent variable variances fixed to 1.00. Fit: $\chi^2(13) = 72.59$, $p < .001$, RMSEA = 0.093, CFI = 0.930, AIC = 14283.024. Note that a phenotypic confirmatory analysis in which the estimate of the correlation was constrained across males and females was also conducted, and demonstrated poorer fit compared to the model excluding MDD; Fit: $\chi^2(6) = 83.413$, $p < .001$, RMSEA = 0.107, CFI = 0.905, AIC = 19998.648.