**Supplementary Material**

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**Table S1**

*Study 1 (N = 382) Partial Correlations between Self-views and Comparison Tendencies, Controlling for Age and Gender*

|  |  |  |
| --- | --- | --- |
|  | Narcissism | Self-esteem |
| 1. DSOC | .527\*\*\* | -.061 |
| 2. USOC | .109\* | -.527\*\*\* |
| 3. DTEM | .205\*\*\* | -.084 |
| 4. UTEM | .170\*\* | -.320\*\*\* |

*Note.* Age (years) and gender (0 = boys, 1 = girls) were controlled for. DSOC refers to downward social comparisons; USOC refers to upward social comparisons; DTEM refers to downward temporal comparisons; UTEM refers to upward social comparisons. Five adolescents had completely missing data on the variables narcissism, self-esteem, downward social comparisons, and downward temporal comparisons; 19 adolescents had completely missing data on the variables upward social comparisons and upward temporal comparisons.

+*p* < .10, \*\*\**p* < .001 (two-tailed).

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| **Table S2**  *The Mediator Role of Social and Temporal Comparisons in the Maintenance of Narcissism and Self-Esteem, Controlling for Age and Gender* | | | | | | | | | | | | |
|  | | |  | | *β* | | | *p*-value | | 95% CI | | |
| Mediator: Downward social comparison | | |  | |  | | | | | | | |
| Narcissism at baseline ~ | | |  | |  | | |  | |  | | |
| Age | | |  | | 0.055 | | | .249 | | [-0.02 – 0.07] | | |
| Gender (Girls) | | |  | | -0.209 | | | < .001\*\*\* | | [-0.27 – -0.10] | | |
|  | | |  | |  | | |  | |  | | |
| Downward social comparison ~ | | |  | |  | | |  | |  | | |
| Narcissism at baseline (*a* path) | | |  | | 0.266 | | | < .001\*\*\* | | [0.16 – 0.40] | | |
| Age | | |  | | 0.056 | | | .309 | | [-0.03 – 0.08] | | |
| Gender (Girls) | | |  | | -0.082 | | | .146 | | [-0.180 – 0.04] | | |
|  | | |  | |  | | |  | |  | | |
| Narcissism at follow-up ~ | | |  | |  | | |  | |  | | |
| Narcissism at baseline (*c* path) | | |  | | 0.598 | | | < .001\*\*\* | | [0.57 – 0.81] | | |
| Downward social comparison (*b* path) | | |  | | 0.208 | | | < .001\*\*\* | | [0.08 – 0.36] | | |
| Age | | |  | | 0.077 | | | .117 | | [-0.01 – 0.09] | | |
| Gender (Girls) | | |  | | -0.058 | | | .264 | | [-0.16 – 0.05] | | |
|  | | |  | |  | | |  | |  | | |
| Mediation effect (*ab*) | | |  | | 0.055 | | | .006\*\* | | [0.02 – 0.11] | | |
| Total effect | | |  | | 0.654 | | | < .001\*\*\* | | [0.63 – 0.87] | | |
|  | | |  | |  | | |  | |  | | |
| Mediator: Upward social comparison | *β* | | | | | *p*-value | | | | | 95% CI | |
| Narcissism at baseline ~ | | |  | |  | | |  | |  | | |
| Age | | |  | | 0.055 | | | .236 | | [-0.02 – 0.07] | | |
| Gender (Girls) | | |  | | -0.208 | | | < .001\*\*\* | | [-0.27 – -0.09] | | |
|  | | |  | |  | | |  | |  | | |
| Upward social comparison ~ | | |  | |  | | |  | |  | | |
| Narcissism at baseline (*a* path) | | |  | | 0.110 | | | .044\* | | [0.01 – 0.22] | | |
| Age | | |  | | 0.126 | | | .026\* | | [0.01 – 0.11] | | |
| Gender (Girls) | | |  | | 0.132 | | | .018\* | | [0.03 – 0.22] | | |
|  | | |  | |  | | |  | |  | | |
| Narcissism at follow-up ~ | | |  | |  | | |  | |  | | |
| Narcissism at baseline (*c* path) | | |  | | 0.654 | | | < .001\*\*\* | | [0.62 – 0.87] | | |
| Upward social comparison (*b* path) | | |  | | 0.025 | | | .671 | | [-0.10 – 0.17] | | |
| Age | | |  | | 0.077 | | | .118 | | [-0.01 – 0.10] | | |
| Gender (Girls) | | |  | | -0.084 | | | .129 | | [-0.19 – 0.03] | | |
|  | | |  | |  | | |  | |  | | |
| Mediation effect (*ab*) | | |  | | 0.003 | | | .719 | | [-0.01 – 0.02] | | |
| Total effect | | |  | | 0.657 | | | < .001\*\*\* | | [0.63 – 0.88] | | |
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| **Table S2 (continued)**  *The Mediator Role of Social and Temporal Comparisons in the Maintenance of Narcissism and Self-Esteem, Controlling for Age and Gender* | | | | | | |
|  |  | *β* | *p*-value | | 95% CI | |
| Mediator: Downward temporal comparison |  |  |  | |  | |
| Narcissism at baseline ~ |  |  |  | |  | |
| Age |  | 0.055 | .238 | | [-0.02 – 0.07] | |
| Gender (Girls) |  | -0.209 | < .001\*\*\* | | [-0.27 – -0.10] | |
|  |  |  |  | |  | |
| Downward temporal comparison ~ |  |  |  | |  | |
| Narcissism at baseline (*a* path) |  | 0.134 | .024\* | | [0.03 – 0.40] | |
| Age |  | -0.108 | .043\* | | [-0.15 – -0.00] | |
| Gender (Girls) |  | -0.089 | .116 | | [-0.28 – 0.04] | |
|  |  |  |  | |  | |
| Narcissism at follow-up ~ |  |  |  | |  | |
| Narcissism at baseline (*c* path) |  | 0.641 | < .001\*\*\* | | [0.62 – 0.86] | |
| Downward temporal (*b* path) |  | 0.121 | .053+ | | [-0.00 – 0.18] | |
| Age |  | 0.093 | .057+ | | [0.00 – 0.10] | |
| Gender (Girls) |  | -0.069 | .191 | | [-0.18 – 0.04] | |
|  |  |  |  | |  | |
| Mediation effect (*ab*) |  | 0.016 | .170 | | [-0.00 – 0.05] | |
| Total effect |  | 0.657 | < .001\*\*\* | | [0.65 – 0.88] | |
|  |  |  |  | |  | |
| Mediator: Upward temporal comparison |  | *β* | | *p*-value | | 95% CI |
| Narcissism at baseline ~ |  |  |  | |  | |
| Age |  | 0.055 | .222 | | [-0.01 – 0.07] | |
| Gender (Girls) |  | -0.208 | < .001\*\*\* | | [-0.27 – -0.09] | |
|  |  |  |  | |  | |
| Upward temporal comparison ~ |  |  |  | |  | |
| Narcissism at baseline (*a* path) |  | 0.045 | .399 | | [-0.05 – 0.14] | |
| Age |  | 0.123 | .026\* | | [0.01 – 0.09] | |
| Gender (Girls) |  | 0.165 | .002\*\* | | [0.05 – 0.22] | |
|  |  |  |  | |  | |
| Narcissism at follow-up ~ |  |  |  | |  | |
| Narcissism at baseline (*c* path) |  | 0.659 | < .001\*\*\* | | [0.62 – 0.90] | |
| Upward temporal comparison (*b* path) |  | -0.009 | .882 | | [-0.15 – 0.17] | |
| Age |  | 0.078 | .127 | | [-0.01 – 0.10] | |
| Gender (Girls) |  | -0.076 | .180 | | [-0.19 – 0.04] | |
|  |  |  |  | |  | |
| Mediation effect (*ab*) |  | -0.000 | .924 | | [-0.01 – 0.01] | |
| Total effect |  | 0.659 | < .001\*\*\* | | [0.62 – 0.90] | |
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| **Table S2 (continued)**  *The Mediator Role of Social and Temporal Comparisons in the Maintenance of Narcissism and Self-Esteem, Controlling for Age and Gender* | | | | | | |
|  |  | *β* | *p*-value | | 95% CI | |
| Mediator: Downward social comparison |  |  | | | | |
| Self-esteem at baseline ~ |  |  |  | |  | |
| Age |  | -0.133 | .015\* | | [-0.13 – -0.02] | |
| Gender (Girls) |  | -0.138 | .006\*\* | | [-0.25 – -0.04] | |
|  |  |  |  | |  | |
| Downward social comparison ~ |  |  |  | |  | |
| Self-esteem at baseline (*a* path) |  | 0.012 | .834 | | [-0.09 – 0.12] | |
| Age |  | 0.066 | .248 | | [-0.02 – 0.09] | |
| Gender (Girls) |  | -0.135 | .015\* | | [-0.23 – -0.03] | |
|  |  |  |  | |  | |
| Self-esteem at follow-up ~ |  |  |  | |  | |
| Self-esteem at baseline (*c* path) |  | 0.675 | < .001\*\*\* | | [0.64 – 0.86] | |
| Downward social comparison (*b* path) |  | -0.047 | .423 | | [-0.20 – 0.09] | |
| Age |  | -0.104 | .055+ | | [-0.13 – -0.00] | |
| Gender (Girls) |  | -0.064 | .239 | | [-0.20 – 0.05] | |
|  |  |  |  | |  | |
| Mediation effect (*ab*) |  | -0.001 | .891 | | [-0.01 – 0.01] | |
| Total effect |  | 0.674 | < .001\*\*\* | | [0.64 – 0.86] | |
|  |  |  |  | |  | |
| Mediator: Upward social comparison |  | *β* | | *p*-value | | 95% CI |
| Self-esteem at baseline ~ |  |  |  | |  | |
| Age |  | -0.132 | .008\*\* | | [-0.12 – -0.02] | |
| Gender (Girls) |  | -0.137 | .008\*\* | | [-0.25 – -0.04] | |
|  |  |  |  | |  | |
| Upward social comparison ~ |  |  |  | |  | |
| Self-esteem at baseline (*a* path) |  | -0.274 | < .001\*\*\* | | [-0.33 – -0.14] | |
| Age |  | 0.097 | .074+ | | [-0.00 – 0.09] | |
| Gender (Girls) |  | 0.074 | .157 | | [-0.03 – 0.15] | |
|  |  |  |  | |  | |
| Self-esteem at follow-up ~ |  |  |  | |  | |
| Self-esteem at baseline (*c* path) |  | 0.636 | < .001\*\*\* | | [0.60 – 0.82] | |
| Upward social comparison (*b* path) |  | -0.129 | .035\* | | [-0.34 – -0.02] | |
| Age |  | -0.104 | .054+ | | [-0.13 – -0.00] | |
| Gender (Girls) |  | -0.044 | .396 | | [-0.17 – 0.06] | |
|  |  |  |  | |  | |
| Mediation effect (*ab*) |  | 0.035 | .063+ | | [0.00 – 0.09] | |
| Total effect |  | 0.671 | .000\*\*\* | | [0.65 – 0.85] | |
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| **Table S2 (continued)**  *The Mediator Role of Social and Temporal Comparisons in the Maintenance of Narcissism and Self-Esteem, Controlling for Age and Gender* | | | | | | |
|  |  | *β* | *p*-value | | 95% CI | |
| Mediator: Downward temporal comparison |  |  |  | |  | |
| Self-esteem at baseline ~ |  |  |  | |  | |
| Age |  | -0.133 | .010\* | | [-0.12 – -0.02] | |
| Gender (Girls) |  | -0.138 | .009\*\* | | [-0.25 – -0.03] | |
|  |  |  |  | |  | |
| Downward temporal comparison ~ |  |  |  | |  | |
| Self-esteem at baseline (*a* path) |  | 0.111 | .040\* | | [0.00 – 0.30] | |
| Age |  | -0.089 | .095+ | | [-0.14 – 0.01] | |
| Gender (Girls) |  | -0.102 | .063+ | | [-0.31 – 0.00] | |
|  |  |  |  | |  | |
| Self-esteem at follow-up ~ |  |  |  | |  | |
| Self-esteem at baseline (*c* path) |  | 0.680 | < .001\*\*\* | | [0.65 – 0.86] | |
| Downward temporal comparison (*b* path) |  | -0.047 | .417 | | [-0.13 – 0.05] | |
| Age |  | -0.111 | .040\* | | [-0.13 – -0.00] | |
| Gender (Girls) |  | -0.060 | .254 | | [-0.07 – -0.06] | |
|  |  |  |  | |  | |
| Mediation effect (*ab*) |  | -0.005 | .493 | | [-0.03 – 0.01] | |
| Total effect |  | 0.675 | < .001\*\*\* | | [0.64 – -0.86] | |
|  |  |  |  | |  | |
| Mediator: Upward temporal comparison |  | *β* | | *p*-value | | 95% CI |
| Self-esteem at baseline ~ |  |  |  | |  | |
| Age |  | -0.133 | .012\* | | [-0.13 – -0.02] | |
| Gender (Girls) |  | -0.138 | .007\*\* | | [-0.24 – -0.04] | |
|  |  |  |  | |  | |
| Upward temporal comparison ~ |  |  |  | |  | |
| Self-esteem at baseline (*a* path) |  | -0.241 | < .001\*\*\* | | [-0.26 – -0.11] | |
| Age |  | 0.094 | .079+ | | [-0.00 – 0.08] | |
| Gender (Girls) |  | 0.125 | .023\* | | [0.01 – 0.18] | |
|  |  |  |  | |  | |
| Self-esteem at follow-up ~ |  |  |  | |  | |
| Self-esteem at baseline (*c* path) |  | 0.672 | < .001\*\*\* | | [0.62 – 0.86] | |
| Upward temporal comparison (*b* path) |  | -0.016 | .788 | | [-0.21 – 0.12] | |
| Age |  | -0.106 | .053+ | | [-0.13 – -0.00] | |
| Gender (Girls) |  | -0.054 | .283 | | [-0.17 – 0.06] | |
|  |  |  |  | |  | |
| Mediation effect (*ab*) |  | 0.004 | .795 | | [-0.02 – 0.04] | |
| Total effect |  | 0.676 | < .001\*\*\* | | [0.64 – 0.86] | |
| *Note*. Bootstrapping with *n* = 1,000 iterations; Age (years) and gender (0 = boys, 1 = girls); *a* path = direct effect of self-views at baseline on comparison types; *b* path = direct effect of comparison types on self-views at follow-up; *c* path = direct effect of self-views at baseline on self-views at follow-up. | | | | | | |

**Table S3**

*Study 1 (N = 362) Partial Correlations between Self-views, Comparison Tendencies, and Self Motives, controlling for Other Types of Self Motives.*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Self-enhancement motive  (SE) | Self- assessment motive (SA) | Self-improvement motive (SI) |
| 1. Narcissism | .420\*\*\* | .064 | .085 |
| 2. Self-esteem | -.022 | -.033 | .110\* |
| 3. DSOC | .273\*\*\* | -.055 | .122\* |
| 4. USOC | .162\*\* | -.013 | -.045 |
| 5. DTEM | .099+ | .140\*\* | .072 |
| 6. UTEM | .108\* | -.028 | .061 |

*Note.* Pearson correlation tested partial correlations between self-views, comparison types, and self-motives, while controlling for other self-motives. Self-enhancement (SE) motive was measured with two items (i.e., “I want to hear that I am amazing” and “I want to discover that I am really good at something”); self-assessment (SA) motive was measured with two items (i.e., “I want to hear the truth about myself” and “I want to discover who I really am”); and self-improvement (SI) was measured with two items (i.e., “I want to hear that I can keep improving” and “I want to discover that I can keep improving”), all rated on 4-point scales (0 = *Not at all true*, 3 = *Completely true*) and averaged per motive. DSOC refers to downward social comparisons; USOC refers to upward social comparisons; DTEM refers to downward temporal comparisons; UTEM refers to upward social comparisons.

+*p* < .10, \*\*\**p* < .001 (two-tailed).

**Figure S1**

*Individual Mediational Models for Narcissism*

A picture containing diagram, plan, technical drawing, line

Description automatically generated

*Note.* \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

**Figure S2**

*Individual Mediational Models for Self-Esteem*

A picture containing diagram, plan, technical drawing, line

Description automatically generated

*Note.* \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.

**Figure S3**

*Mediational Models for Narcissism Controlling for Age and Gender*

*A diagram of a social comparison

Description automatically generated with medium confidence*

*Note.* Age (years) and gender (0 = boys, 1 = girls) were controlled for. Regression paths controlling for covariates are denoted with gray color. Solid gray lines indicate significant relationships at *p* < .05. Dashed gray lines indicate non-significant relationships at *p* >.10.

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

**Figure S4**

*Mediational Models for Self-Esteem Controlling for Age and Gender*

*A diagram of a social comparison

Description automatically generated*

*Note.* Age (years) and gender (0 = boys, 1 = girls) were controlled for. Regression paths controlling for covariates are denoted with gray color. Solid gray lines indicate significant relationships at *p* <.05. Dashed gray lines indicate non-significant relationships at *p* >.10.   
+*p* <.10, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001.