## Supplementary Materials

Gendered Outgroup Prejudice:
An Evolutionary Threat Management Perspective on Anti-Immigrant Bias

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## 1. Full models of the analyses

Table S1

Analysis of Variance (ANOVA) Between Sex and Origin of Immigrants on Comfort with Immigrants (Study 1)

|                | Model 1                       | Model 2                       |
|----------------|-------------------------------|-------------------------------|
|                | \(F\) | \(p\) | \(\eta^2_p\) | \(F\) | \(p\) | \(\eta^2_p\) |
| Sex            | 15.19 | < .001 | 0.056       | 17.00 | < .001 | 0.062       |
| Origin         | 0.36  | 0.550  | 0.001       | 0.59  | 0.440  | 0.002       |
| Sex × Origin   | 2.53  | 0.113  | 0.010       | 3.81  | 0.052  | 0.015       |
| Social Political Attitude |       |        |             | 23.37 | < .001 | 0.084       |
| Economic Political Attitude |       |        |             | 0.002 | 0.969  | < .001       |

Table 2

Binary Logistic Regression Between Sex and Origin of immigrants on decision regarding immigrants (Study 1)

|                | Model 1                       | Model 2                       |
|----------------|-------------------------------|-------------------------------|
|                | B    | Wald | \(p\) | Odds ratio | B    | Wald | \(p\) | Odds ratio |
| Sex            | -0.48 | 0.02 | 0.897 | 0.95       | -0.13 | 0.11 | 0.739 | 0.88       |
| Origin         | -0.83 | 4.18 | 0.041 | 0.44       | -0.95 | 5.09 | 0.024 | 0.39       |
| Sex × Origin   | 1.15  | 4.50 | 0.034 | 3.15       | 1.35  | 5.67 | 0.017 | 3.85       |
| Social Political Attitude |       |        |        |             | 0.31  | 7.26 | 0.007 | 1.36       |
| Economical Political Attitude |       |        |        |             | 0.10  | 0.92 | 0.338 | 1.10       |

Table S3

Analysis of Variance (ANOVA) Between Sex and Origin of Immigrants on Comfort with Immigrants (Study 2)

|                | Model 1                       | Model 2                       |
|----------------|-------------------------------|-------------------------------|
|                | \(F\) | \(p\) | \(\eta^2_p\) | \(F\) | \(p\) | \(\eta^2_p\) |
| Sex            | 30.87 | < .001 | 0.042       | 39.08 | < .001 | 0.053       |
| Origin         | 38.90 | < .001 | 0.100       | 49.92 | < .001 | 0.125       |
| Sex × Origin   | 1.79  | 0.169  | 0.005       | 2.42  | 0.090  | 0.007       |
| Social Political Attitude |       |        |        |             | 29.85 | < .001 | 0.041       |
Table S4

Binary Logistic Regression Between Sex and Origin of Immigrants on Decision regarding Immigrants (Study 2)

|                | Model 1          |                | Model 2          |                |
|----------------|------------------|----------------|------------------|----------------|
|                | B    | Wald   | p   | Odds ratio | B    | Wald   | p   | Odds ratio |
| Sex            | 0.70  | 6.92   | 0.009 | 2.01       | 0.85  | 8.44   | 0.004 | 2.34       |
| Origin         | 15.24 | < .001 |       |            | 22.28 | < .001 |       |            |
| Origin(1)      | -0.89 | 7.10   | 0.008 | 0.41       | -1.06 | 8.63   | 0.003 | 0.35       |
| Origin(2)      | 0.40  | 2.20   | 0.138 | 1.49       | 0.65  | 4.75   | 0.029 | 1.92       |
| Sex × Origin   | 2.55  | 0.279  |       |            | 3.45  | 0.178  |       |            |
| Sex × Origin(1)| -0.06 | 0.018  | 0.893 | 0.94       | -0.03 | 0.003  | 0.960 | 0.97       |
| Sex × Origin(2)| -0.57 | 2.24   | 0.135 | 0.57       | -0.71 | 2.9    | 0.089 | 0.49       |
| Social Political Attitude | | | | | | | 0.33 | 17.89 | < .001 | 1.40 |
| Economical Political Attitude | | | | | | | 0.26 | 11.48 | 0.001 | 1.29 |

*Note: Origin(1) represents Contrast 1, which is the contrast of Syrian immigrants versus Liberian immigrants. Origin(2) represents Contrast 2, which is the contrast of Syrian versus Lithuanian immigrants.*

Table S5

Analysis of Variance (ANOVA) Between Sex and Origin of immigrants on comfort with immigrants (study 3)

|                | Model 1          |                | Model 2          |                |
|----------------|------------------|----------------|------------------|----------------|
|                | F    | p   | ηp² |          | F    | p   | ηp² |          |
| Sex            | 30.25 | < .001 | 0.055 |          | 34.06 | < .001 | 0.062 |          |
| Origin         | 10.85 | 0.001 | 0.021 |          | 16.63 | < .001 | 0.031 |          |
| Sex × Origin   | 14.02 | < .001 | 0.026 |          | 14.98 | < .001 | 0.028 |          |
| Social Political Attitude | | | | 23.14 | < .001 | 0.043 |          |
| Economical Political Attitude | | | | 1.19  | 0.275  | 0.002 |          |
Table S6
Binary Logistic Regression Between Sex and Origin of immigrants on decision regarding immigrants (Study 3)

|               | Model 1          | Model 2          |
|---------------|------------------|------------------|
|               | B    | Wald | p    | Odds ratio | B    | Wald | p    | Odds ratio |
| Sex           | 0.25 | 0.99 | 0.319 | 1.28       | < .00 |       |       | 1.34       |
| Origin        | -1.27 | 20.70 | 1    | 0.28       | -1.52 | 25.25 | 1    | 0.22       |
| Sex × Origin  | 1.08 | 8.30 | 0.004 | 2.94       | 1.19 | 8.61 | 0.003 | 3.28       |
| Social Political Attitude | 0.42 | 18.57 | 1    | 1.53       |
| Economical Political Attitude | 0.06 | 0.38 | 0.537 | 1.06       |

2. Models including sex of participant

Table S7
Analysis of Variance (ANOVA) of Sex and Origin of Immigrants, and Sex of Participants on Comfort with Immigrants (Study 1)

|               | Model 1          | Model 2          |
|---------------|------------------|------------------|
|               | F    | p    | ηp²  | F    | p    | ηp²  |
| Isex          | 16.21 | < .001 | 0.060 | 18.08 | < .001 | 0.067 |
| Origin        | 0.23 | 0.634 | 0.001 | 0.30 | 0.584 | 0.001 |
| Psex          | 12.15 | 0.001 | 0.046 | 7.04 | 0.008 | 0.027 |
| Isex × Origin | 1.32 | 0.252 | 0.005 | 2.65 | 0.105 | 0.010 |
| Isex × Psex   | 0.02 | 0.883 | < .001 | 0.02 | 0.885 | < .001 |
| Origin × Psex | 0.33 | 0.566 | 0.001 | 0.86 | 0.353 | 0.003 |
| Isex × Origin × Psex | 0.19 | 0.665 | 0.001 | 0.53 | 0.468 | 0.002 |
| Social Political Attitude | 21.84 | < .001 | 0.080 |
| Economical Political Attitude | 0.02 | 0.878 | < .001 |
Table S8
Binary Logistic Regression of Sex and Origin of Immigrants, and Sex of Participants on Decision regarding Immigrants (Study 1)

|                  | Model 1          |          |          | Model 2          |          |          |
|------------------|------------------|----------|----------|------------------|----------|----------|
|                  | B    | Wald | p    | Odds ratio | B    | Wald | p    | Odds ratio |
| Isex             | 0.14 | 0.04 | 0.836 | 1.15       | -0.06 | 0.01 | 0.930 | 0.94       |
| Origin           | -1.09 | 1.85 | 0.174 | 0.34       | -1.25 | 2.27 | 0.132 | 0.29       |
| Psex             | 0.62 | 1.07 | 0.301 | 1.87       | 0.43  | 0.45 | 0.503 | 1.53       |
| Isex × Origin    | 1.29 | 1.64 | 0.200 | 3.64       | 1.72  | 2.68 | 0.102 | 5.58       |
| Isex × Psex      | -0.14 | 0.03 | 0.865 | 0.87       | 0.02  | <0.001 | 0.985 | 1.02       |
| Origin × Psex    | 0.47 | 0.25 | 0.618 | 1.59       | 0.51  | 0.27 | 0.601 | 1.66       |
| Isex × Origin × Psex | -0.40 | 0.11 | 0.743 | 0.67       | -0.70 | 0.31 | 0.575 | 0.50       |
| Social Political Attitude |          |          |          | 0.29 | 6.55 | 0.010 | 1.34       |
| Economical Political Attitude |          |          |          | 0.09 | 0.79 | 0.375 | 1.10       |

Table S9
Analysis of Variance (ANOVA) of Sex and Origin of Immigrants, and Sex of Participants on Comfort with Immigrants (Study 2)

|                  | Model 1          | Model 2          |
|------------------|------------------|------------------|
|                  | F    | p    | ηp²  | F    | p    | ηp²  |
| Isex             | 31.09 | < .001 | 0.043 | 39.19 | < .001 | 0.054 |
| Origin           | 37.42 | < .001 | 0.098 | 48.02 | < .001 | 0.122 |
| Psex             | 0.001 | 0.979 | < .001 | 0.60  | 0.439 | 0.001 |
| Isex × Origin    | 1.56  | 0.211 | 0.004 | 1.99  | 0.137 | 0.006 |
| Isex × Psex      | 0.04  | 0.850 | < .001 | 0.37  | 0.545 | 0.001 |
| Origin × Psex    | 1.06  | 0.346 | 0.003 | 0.31  | 0.732 | 0.001 |
| Isex × Origin × Psex | 0.27 | 0.765 | 0.001 | 1.00  | 0.369 | 0.003 |
| Social Political Attitude | 30.33 | < .001 | 0.042 |          |          |       |
| Economical Political Attitude | 7.02  | 0.008 | 0.010 |          |          |       |
### Table S10

Binary Logistic Regression of Sex and Origin of Immigrants, and Sex of Participants on Decision regarding Immigrants (Study 2)

|                | Model 1 |               |               | Model 2 |               |               |
|----------------|---------|---------------|---------------|---------|---------------|---------------|
|                | B       | Wald          | p             | Odds ratio | B             | Wald          | p             | Odds ratio |
| Isex           | 0.68    | 1.79          | 0.181         | 1.97     | 0.89          | 2.60          | 0.107         | 2.44       |
| Origin         | 3.32    | 1.90          |              |          | 4.45          |              | 0.108         |            |
| Origin(1)      | 0.87    | 3.09          | 0.079         | 2.39     | 1.02          | 3.55          | 0.059         | 2.78       |
| Origin(2)      | 0.80    | 2.27          | 0.132         | 2.22     | 1.11          | 3.74          | 0.053         | 3.04       |
| Psex           | -0.15   | 0.07          | 0.791         | 0.87     | -0.23         | 0.16          | 0.691         | 0.79       |
| Isex × Origin  | 0.67    | 0.714         |              |          | 0.23          | 0.893         |              |            |
| Isex × Origin(1)| -0.001 | <0.001        | 0.999         | 1.00     | -0.17         | 0.06          | 0.812         | 0.85       |
| Isex × Origin(2)| -0.44  | 0.44          | 0.509         | 0.64     | -0.35         | 0.22          | 0.636         | 0.71       |
| Isex × Psex    | -0.11   | 0.02          | 0.877         | 0.90     | -0.18         | 0.06          | 0.814         | 0.84       |
| Origin × Psex  | 2.23    | 0.329         |              |          | 2.68          | 0.261         |              |            |
| Origin(1) × Psex| 0.01   | <0.001        | 0.986         | 1.01     | 0.04          | 0.004         | 0.952         | 1.04       |
| Origin(2) × Psex| 0.77   | 1.29          | 0.256         | 2.17     | 0.95          | 1.66          | 0.197         | 2.58       |
| Isex × Origin × Psex | 0.04 | 0.980         |              |          | 0.98          | 0.613         |              |            |
| Isex × Origin(1) × Psex | 0.16 | 0.03          | 0.854         | 1.18     | 0.41          | 0.19          | 0.666         | 1.51       |
| Isex × Origin(2) × Psex | 0.05 | 0.003         | 0.958         | 1.05     | -0.44         | 0.20          | 0.653         | 0.65       |
| Social Political Attitude |               |               |              |          | 0.34          | 17.62         | <.001         | 1.40       |
| Economical Political Attitude |              |               |              |          | 0.26          | 11.44         | 0.001         | 1.29       |

*Note: Origin(1) represents Contrast 1, which is the contrast of Syrian immigrants versus Liberian immigrants. Origin(2) represents Contrast 2, which is the contrast of Syrian versus Lithuanian immigrants.*
Table S11
Analysis of Variance (ANOVA) of Sex and Origin of Immigrants, and Sex of Participants on Comfort with Immigrants (Study 3)

|                      | Model 1               |                      | Model 2               |
|----------------------|-----------------------|----------------------|-----------------------|
|                      | $F$       | $p$     | $\eta^2_p$ | $F$       | $p$     | $\eta^2_p$ |
| Isex                 | 28.83    | < .001 | 0.053      | 33.18    | < .001 | 0.061      |
| Origin               | 10.29    | 0.001  | 0.020      | 16.16    | < .001 | 0.031      |
| Psex                 | 0.09     | 0.765  | < .001     | 0.07     | 0.793  | < .001     |
| Isex × Origin        | 10.72    | 0.001  | 0.020      | 10.39    | 0.001  | 0.020      |
| Isex × Psex          | 0.13     | 0.719  | < .001     | 0.27     | 0.605  | 0.001      |
| Origin × Psex        | 0.20     | 0.654  | < .001     | 0.49     | 0.483  | 0.001      |
| Isex × Origin × Psex | 0.94     | 0.333  | 0.002      | 2.64     | 0.105  | 0.005      |
| Social Political Attitude | 23.91   | < .001 | 0.045      |
| Economical Political Attitude | 1.13 | 0.288  | 0.002      |

Table S12
Binary Logistic Regression of Sex and Origin of Immigrants, and Sex of Participants on Decision regarding Immigrants (Study 3)

|                      | Model 1               |                      | Model 2               |
|----------------------|-----------------------|----------------------|-----------------------|
|                      | B        | Wald   | $p$   | Odds ratio | B        | Wald   | $p$   | Odds ratio |
| Isex                 | 0.25     | 0.34   | 0.561 | 1.29      | 0.46     | 0.97   | 0.325 | 1.58       |
| Origin               | -1.26    | 7.30   | 0.007 | 0.28      | -1.43    | 8.13   | 0.004 | 0.24       |
| Psex                 | 0.10     | 0.07   | 0.794 | 1.11      | 0.19     | 0.21   | 0.646 | 1.21       |
| Isex × Origin        | 1.22     | 3.86   | 0.050 | 3.39      | 1.09     | 2.67   | 0.102 | 2.98       |
| Isex × Psex          | 0.01     | <0.001 | 0.988 | 1.01      | -0.24    | 0.18   | 0.674 | 0.79       |
| Origin × Psex        | 0.02     | 0.001  | 0.976 | 1.02      | -0.11    | 0.03   | 0.863 | 0.90       |
| Isex × Origin × Psex | -0.25    | 0.10   | 0.748 | 0.78      | 0.13     | 0.02   | 0.882 | 1.13       |
| Social Political Attitude | 0.43 | 18.64  | <0.001 | 1.53       |
| Economical Political Attitude | 0.06 | 0.37   | 0.545 | 1.06       |
3. Full models of the moderated mediation analyses.

Table S13
Mediation effect of threat perceptions on the effect of immigrant sex on attitudes toward Syrian and Liberian immigrants (Study 1)

|                        | Comfort with immigrants |                          | Immigration decisions |                          |
|------------------------|-------------------------|--------------------------|-----------------------|--------------------------|
|                        | Effect | SE | 95%CI       | Effect | SE | 95%CI       |
| Direct effect          |         |    |             |         |    |             |
| Origin = Syria         | 0.68    | 0.25 | [0.18, 1.17] | -0.85  | 0.47 | [-1.77, 0.06] |
| Origin = Liberia       | 0.10    | 0.25 | [-0.39, 0.59] | 0.58   | 0.46 | [-0.32, 1.49] |
| Indirect effect (via perceived violence threat) |         |    |             |         |    |             |
| Origin = Syria         | 0.32    | 0.12 | [0.11, 0.58] | -0.33  | 0.19 | [-0.69, -0.06] |
| Origin = Liberia       | 0.23    | 0.10 | [0.06, 0.45] | -0.24  | 0.14 | [-0.56, -0.03] |
| Index of moderated mediation (Difference between conditional indirect effects) | -0.09   | 0.12 | [-0.34, 0.15] | 0.09   | 0.13 | [-0.16, 0.39] |
| Indirect effect (via perceived pathogen threat) |         |    |             |         |    |             |
| Origin = Syria         | 0.26    | 0.14 | [-0.01, 0.54] | -0.34  | 0.19 | [-0.76, 0.01] |
| Origin = Liberia       | 0.19    | 0.18 | [-0.15, 0.58] | -0.25  | 0.24 | [-0.77, 0.21] |
| Index of moderated mediation (Difference between conditional indirect effects) | -0.06   | 0.23 | [-0.52, 0.38] | 0.08   | 0.31 | [-0.50, 0.71] |
Table S14
Mediation effect of threat perceptions on the effect of immigrant sex on attitudes toward Syrian, Liberian, and Lithuanian immigrants (Study 2)

|                          | Comfort with immigrants |                | Immigration decisions |                |
|--------------------------|-------------------------|-----------------|-----------------------|-----------------|
|                          | Effect | SE   | 95%CI               | Effect | SE   | 95%CI |
| Direct effect            |         |      |                     |         |      |       |
| Origin = Syria           | 0.48    | 0.17 | [0.14, 0.81]        | -0.31  | 0.36 | [-1.01, 0.40] |
| Origin = Liberia         | -0.11   | 0.18 | [-0.46, 0.24]       | 0.58   | 0.35 | [0.11, 1.27] |
| Origin = Lithuania       | 0.52    | 0.18 | [0.17, 0.87]        | -0.25  | 0.41 | [-1.06, 0.56] |
| Indirect effect (via perceived violence threat) |         |      |                     |         |      |       |
| Origin = Syria           | 0.25    | 0.09 | [0.10, 0.44]        | -0.39  | 0.14 | [-0.70, -0.16] |
| Origin = Liberia         | 0.19    | 0.08 | [0.06, 0.36]        | -0.30  | 0.12 | [-0.56, -0.11] |
| Origin = Lithuania       | 0.16    | 0.06 | [0.06, 0.30]        | -0.26  | 0.10 | [-0.49, -0.10] |
| Index of moderated mediation |       |      |                     |         |      |       |
| Syrian vs. Liberian      | -0.06   | 0.08 | [-0.22, 0.10]       | 0.09   | 0.13 | [-0.15, 0.36] |
| Syrian vs. Lithuanian    | -0.09   | 0.08 | [-0.25, 0.05]       | 0.14   | 0.12 | [-0.10, 0.40] |
| Indirect effect (via perceived pathogen threat) |         |      |                     |         |      |       |
| Origin = Syria           | 0.21    | 0.10 | [0.01, 0.42]        | -0.22  | 0.12 | [-0.48, -0.004] |
| Origin = Liberia         | 0.21    | 0.11 | [0.002, 0.42]       | -0.23  | 0.13 | [-0.50, 0.005] |
| Origin = Lithuania       | 0.13    | 0.08 | [-0.02, 0.30]       | -0.14  | 0.09 | [-0.35, 0.02] |
| Index of moderated mediation |       |      |                     |         |      |       |
| Syrian vs. Liberian      | 0.01    | 0.15 | [-0.29, 0.29]       | -0.01  | 0.17 | [-0.33, 0.33] |
| Syrian vs. Lithuanian    | -0.07   | 0.13 | [-0.33, 0.18]       | 0.08   | 0.14 | [-0.20, 0.37] |
| Indirect effect (via perceived economic threat) |         |      |                     |         |      |       |
| Origin = Syria           | 0.10    | 0.05 | [0.01, 0.22]        | -0.19  | 0.10 | [-0.42, -0.02] |
| Origin = Liberia         | 0.12    | 0.05 | [0.04, 0.24]        | -0.23  | 0.09 | [-0.44, -0.07] |
| Origin = Lithuania       | 0.06    | 0.05 | [-0.02, 0.16]       | -0.12  | 0.09 | [-0.31, 0.03] |
| Index of moderated mediation |       |      |                     |         |      |       |
| Syrian vs. Liberian      | 0.02    | 0.07 | [-0.11, 0.16]       | -0.04  | 0.12 | [-0.28, 0.20] |
| Syrian vs. Lithuanian    | -0.04   | 0.07 | [-0.17, 0.09]       | 0.07   | 0.12 | [-0.17, 0.32] |
Table S15
Mediation effect of threat perceptions on the effect of immigrant sex on attitudes toward immigrants from violent ecologies and pathogen-rich ecologies (Study 3)

|                        | Comfort with immigrants | Immigration decisions |
|------------------------|-------------------------|-----------------------|
|                        | Effect  | SE    | 95%CI     | Effect  | SE    | 95%CI     |
| Direct effect          |         |       |           |         |       |           |
| Origin = violent ecology| 1.25    | 0.19  | [0.88, 1.63] | -1.74   | 0.38  | [-2.49, -0.99] |
| Origin = pathogen-rich ecology | 0.22    | 0.19  | [-0.16, 0.59] | -0.25   | 0.32  | [-0.87, 0.38] |
| Indirect effect (via perceived violence threat) |         |       |           |         |       |           |
| Origin = violent ecology | 0.23    | 0.09  | [0.09, 0.42] | -0.36   | 0.14  | [-0.68, -0.14] |
| Origin = pathogen-rich ecology | 0.10    | 0.06  | [0.005, 0.23] | -0.15   | 0.09  | [-0.36, -0.01] |
| Index of moderated mediation (difference between conditional indirect effects) | -0.13   | 0.08  | [-0.32, 0.01] | 0.21    | 0.13  | [-0.01, 0.51] |
| Indirect effect (via perceived pathogen threat) |         |       |           |         |       |           |
| Origin = violent ecology | 0.10    | 0.11  | [-0.11, 0.32] | -0.14   | 0.15  | [-0.46, 0.15] |
| Origin = pathogen-rich ecology | 0.004   | 0.12  | [-0.23, 0.23] | -0.01   | 0.16  | [-0.32, 0.31] |
| Index of moderated mediation (difference between conditional indirect effects) | -0.10   | 0.16  | [-0.43, 0.21] | 0.13    | 0.13  | [-0.30, 0.59] |
| Indirect effect (via perceived economic threat) |         |       |           |         |       |           |
| Origin = violent ecology | 0.003   | 0.02  | [-0.03, 0.04] | -0.003  | 0.03  | [-0.07, 0.05] |
| Origin = pathogen-rich ecology | -0.02   | 0.02  | [-0.08, 0.02] | 0.02    | 0.04  | [-0.06, 0.11] |
| Index of moderated mediation (difference between conditional indirect effects) | -0.02   | 0.03  | [-0.10, 0.03] | 0.03    | 0.05  | [-0.07, 0.15] |
4. Additional Studies 4a and 4b testing the effect of immigrant age on gendered outgroup prejudice against refugees.

Study 4

Studies 1, 2, 3 suggested that individuals evaluated male and female immigrants differently depending on the type of ecology the immigrants came from. However, results were based only on MTurk workers from the U.S. During the periods of data collection of Study 4a and 4b, there was an ongoing migrant crisis in Europe. We thus decided to replicate the study in the Netherlands with an opportunity sample collected on the streets, by asking Dutch citizens’ attitudes toward refugees from either a violent ecology (Study 4a) or a pathogen-rich ecology (Study 4b). In addition to the predicted effect of immigrant sex, we also examined whether immigrant age would influence people’s attitudes toward immigrants from different ecologies. We hypothesized that attitudes toward younger male immigrants from a violent ecology would be more negative than attitudes toward older immigrants from the same ecology, because, following the male warrior hypothesis, young outgroup males are historically associated with intergroup violence (McDonald, Navarrete, & Van Vugt, M, 2012). In contrast, we hypothesized that people’s attitude toward older (versus younger) immigrants from a pathogen-rich ecology would be more negative, because old people are more strongly associated with pathogen risks (Duncan, & Schaller, 2009).

Study 4a: Method

Participants and Method. One hundred eighty-one Dutch participants (92 women, 89 men; $M = 33.12$ years, $SD = 17.88$ years) were recruited on the streets in several major
cities in the Netherlands, and they answered questions using iPads. They received a chocolate bar in exchange for their participation.

**Procedure and material.** To find out the most representative immigrant groups that people perceived as posing a violence threat to Dutch society, we conducted a pilot study ($N = 70$) to compare perceived violence and pathogen threats of six common migrant groups in the Netherlands: Afghanistan, Nigeria, Sierra Leone, Thailand, Poland and Syria. Based on the results of the pilot study, we chose Syria to represent violent immigrants ecology, which was perceived as posing high violence threat (ranked third out of six countries) and low pathogen threat (ranked fifth out of six countries).

Participants were randomly assigned to read one of four immigration scenarios (one of each sex/age combination). The scenarios described a group of 100 male (or female) Syrian refugees, aged 20-24 (or age 50-54), who need to be placed in a particular community. Participants were asked if the refugees were placed in their community, how comfortable they would feel from 0 (very uncomfortable) to 100 (very comfortable), and, if the decision were up to them, whether they would allow these refugees to be located in their community (yes or no). Similar to Study 1, we also measured perceptions of violence and pathogen threats posed by those refugees. Participants then provided demographic information and rated their political orientation on a 7-point scale, from 1 (more left) to 7 (more right).

**Study 4a: Results and discussion**

Consistent with the pilot study, Dutch participants felt Syrian immigrants as posing relatively high violence threat ($M = 3.08$, $SD = 1.75$) compare to violence perceptions of Syrian immigrants in Studies 1 ($M = 2.81$, $SD = 1.48$) and 2 ($M = 3.14$, $SD = 1.93$).
Attitudes toward immigrants. Consistent with Studies 1, 2 and 3, a 2 (sex of immigrants: male, female) × 2 (age of immigrants: younger, older) ANOVA on comfort with immigrants revealed that participants were less comfortable with immigration by Syrian men (\(M = 55.14, SD = 25.30\)) than Syrian women (\(M = 66.76, SD = 23.27\)), \(F(1, 177) = 10.37, p = .002, d = .483\). However, age did not moderate attitudes toward immigrants, \(F(1, 177) = 1.64, p = .202, \eta^2_p = .009\). Effects were unchanged when we added political orientation as a covariate in the model.

Consistent with the continuous measure, results of binary logistic regression showed that participants were more likely to accept female Syrian (78.4%) than male Syrian refugees (57.0%), \(OR = 3.12, \chi^2(1) = 5.57, p = .018\), see Figure S1. No effect of target age emerged. Effects remained the same after controlling for political orientation.

Figure S1. Acceptance rate of Syrian refugees regressed on age and sex of immigrants (Study 4a). Error bars represent 95% confidence intervals.

Results of Study 4a were largely consistent with Studies 1, 2 and 3. People were more prejudiced toward male versus female immigrants who came from a violent ecology.
However, inconsistent with our hypothesis, we did not find age effect on attitudes toward immigrants from a violent ecology.

**Study 4b: Method**

**Participants and design.** One hundred eighty-four Dutch participants (85 women, 99 men; $M = 35.88$ years, $SD = 17.78$ years) were recruited (a couple of weeks after Study 3a) on the streets and answered questions using iPads. They received a chocolate bar in exchange for their participation.

**Procedure and material.** Following the same pilot study of Study 4a, which tested perceived violence and pathogen threat of six common migrants groups in the Netherlands, we chose Nigeria (ranked fourth on perceived violence threat and first on perceived pathogen threat) to represent the pathogen-rich immigrants group.

Participants were randomly assigned to read one of four immigration scenarios (one of each sex/age combination). The scenarios described a group of 100 male (or female) Nigerian refugees, aged 20-24 (or age 50-54), who need to be placed in a particular community. As in Study 3a, after reading the scenario, participants rated their comfort with the refugees and their decisions to allow immigration. They also reported their perceptions of violence and pathogen threats posed by the refugees and then provided their political orientation and demographic information. Notably, participants reported a lower perceived pathogen threat from Nigerian immigrants ($M = 2.44$, $SD = 1.44$) relative to the pathogen threat reported from Liberian immigrants in Studies 1 ($M = 3.67$, $SD = 1.75$) and 2 ($M = 4.03$, $SD = 1.93$). We address this issue in the internal meta-analysis.

**Study 4b: Results and discussion**
Attitudes toward immigrants. Consistent with Studies 1, 2 and 3, a 2 (sex of immigrants: male, female) × 2 (age of immigrants: younger, older) ANOVA showed no differences between comfort with immigration by Nigerian men ($M = 62.41, SD = 23.40$) and women ($M = 63.25, SD = 24.44$), $F(1, 180) = 0.10, p = .752, d = .035$. We also found a marginally significant interaction between sex and age of immigrants, $F(1, 180) = 3.47, p = .064, \eta^2_p = .019$. Participants were marginally less comfortable with younger Nigerian men ($M = 57.83, SD = 26.66$) than older Nigerian men ($M = 65.91, SD = 20.12$), $F(1, 180) = 2.75, p = .099, d = .342$. In contrast, there was no difference of attitudes toward younger ($M = 65.54, SD = 24.03$) and older Nigerian women ($M = 60.44, SD = 24.96$), $F(1, 180) = 0.99, p = .321, d = .208$. Adding political orientation as a covariate in the model did not affect these inferences.

Consistent with the continuous measure, results of binary logistic regression showed no differences in immigration decision regarding Nigerian men (77.3%) and women (79.3%), $OR = 1.08, \chi^2(1) = 0.02, p = .879$ (See Table 8 in the supplementary materials). Results did not show an interaction between sex and age of immigrants on immigration decisions (See Figure S2). Effects remained the same after controlling for political orientation.
Results of Study 4b were largely consistent with Studies 1, 2 and 3. There was no difference of attitudes toward male versus female immigrants who came from a pathogen-rich ecology, and we did not find a strong age effect on attitudes toward immigrants from a pathogen-rich origin. However, there was a validity problem of using Nigerian refugees to represent the immigrants from a pathogen-rich ecology. Although in the pilot study, Nigerian immigrants were perceived as posing the highest level of pathogen threat, in the actual study, the perceived pathogen threat toward Nigerian immigrants were relatively low comparing to Liberian immigrants in Studies 1 and 2. Therefore, the results of Study 4b regarding pathogen threat should be interpreted with some caution.