

**Table S1** Gender-specific differences on outcomes between intervention groups by distance to the high-risk areas of COVID-19 at the COVID-19 survey (n=156)<sup>‡</sup>

|  | Lifestyle-related behavior change |                | Self-care activities |                | Depression |                   |
|--|-----------------------------------|----------------|----------------------|----------------|------------|-------------------|
|  | $\beta$                           | CI             | $\beta$              | CI             | $\beta$    | CI                |
| Distance                                     | 0.06                              | (-0.07, 0.19)  | 0.11                 | (-0.66, 0.88)  | -0.24      | (-0.46, -0.02) *  |
| Male   | 1.53                              | (0.24, 2.81) * | 2.15                 | (-5.39, 9.7)   | -3.43      | (-5.62, -1.24) ** |
| Intervention                                 | 1.31                              | (0.03, 2.59) * | 0.5                  | (-7.09, 8.14)  | -2.05      | (-4.25, 0.16)     |
| Male $\times$ distance                       | -0.01                             | (-0.37, 0.34)  | -0.79                | (-2.96, 1.46)  | 0.53       | (-0.07, 1.14)     |
| Intervention $\times$ distance               | 0.09                              | (-0.29, 0.47)  | 0.46                 | (-1.88, 2.86)  | 0.37       | (-0.34, 1.08)     |
| Male $\times$ intervention                   | -1.81                             | (-3.69, 0.05)  | -1.07                | (-11.97, 9.78) | 1.6        | (-1.56, 4.75)     |
| Male $\times$ intervention $\times$ distance | 0.08                              | (-0.48, 0.65)  | -0.74                | (-4.1, 2.62)   | -0.78      | (-1.77, 0.22)     |

<sup>‡</sup> Adjusted for age, sex, education, and retirement status.

\* $P < 0.05$ .

\*\* $P < 0.01$ .

**Table S2** Longitudinal changes of gender-specific difference on outcomes between intervention groups by distance to the high-risk areas of COVID-19 (n=156) <sup>‡</sup>

|  | Self-care activities |                | Depression |                  |
|--|----------------------|----------------|------------|------------------|
|  | $\beta$              | CI             | $\beta$    | CI               |
| Distance                                 | -0.24                | (-0.74, 0.26)  | -0.13      | (-0.34, 0.09)    |
| Male                                     | 0.77                 | (-4.68, 6.21)  | -1.93      | (-4.00, 0.15)    |
| Intervention                             | -2.73                | (-8.37, 2.91)  | 1.14       | (-0.99, 3.27)    |
| Time <sup>a</sup>                        |                      |                |            |                  |
| Time (three-month)                       | 2.48                 | (-2.43, 7.39)  | /          | /                |
| Time (COVID-19)                          | 4.00                 | (-0.63, 8.63)  | 0.03       | (-1.54, 1.59)    |
| Distance $\times$ Male                   | /                    | /              | 0.04       | (-0.52, 0.61)    |
| Distance $\times$ Intervention           | /                    | /              | -0.51      | (-1.17, 0.16)    |
| Male $\times$ Intervention               | 2.15                 | (-5.57, 9.86)  | -2.26      | (-5.34, 0.82)    |
| Distance $\times$ Time (COVID-19)        | /                    | /              | -0.13      | (-0.40, 0.14)    |
| Male $\times$ Time (three-month)         | 5.71                 | (-1.36, 12.78) | /          | /                |
| Male $\times$ Time (COVID-19)            | -1.67                | (-8.25, 4.92)  | -1.19      | (-3.83, 1.45)    |
| Intervention $\times$ Time (three-month) | 5.01                 | (-2.16, 12.18) | /          | /                |
| Intervention $\times$ Time (COVID-19)    | 4.09                 | (-2.85, 11.04) | -2.87      | (-5.59, -0.16) * |

|   |        |                   |       |                  |
|---|--------|-------------------|-------|------------------|
| Distance × Male × Intervention                      | /      | /                 | 0.77  | (-0.20, 1.73)    |
| Distance × Male ×<br>Time (COVID-19)                | /      | /                 | 0.48  | (-0.24, 1.20)    |
| Distance × Intervention ×<br>Time (COVID-19)        | /      | /                 | 0.76  | (-0.09, 1.61)    |
| Male × Intervention ×<br>Time (three-month)         | -11.68 | (-21.69, -1.66) * | /     | /                |
| Male × Intervention ×<br>Time (COVID-19)            | -4.49  | (-13.94, 4.95)    | 3.55  | (-0.38, 7.47)    |
| Distance × Male × Intervention ×<br>Time (COVID-19) | /      | /                 | -1.42 | (-2.66, -0.18) * |

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<sup>‡</sup> Adjusted for age, sex, education, and retirement status.

<sup>a</sup> Reference: time at baseline.

\* $P < 0.05$ .