|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **M / %** | **SD** | **Min.** | **Max.** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| 1. **Age** | 74.74 | 7.89 | 60 | 95 | - |  |  |  |  |  |  |  |  |  |  |  |
| 1. **Gendera** | 48.2% | - | - | - | .06 | - |  |  |  |  |  |  |  |  |  |  |
| 1. **Experienced at least one negative life eventb** | 44.7% | - | - | - | .13\* | .03 | - |  |  |  |  |  |  |  |  |  |
| 1. **Change in financial situation** | 8.7% | - | - | - | .02 | .04 | .34\* | - |  |  |  |  |  |  |  |  |
| 1. **Health deteriorated** | 26.1% | - | - | - | .18\* | .03 | .66\* | .16\* | - |  |  |  |  |  |  |  |
| 1. **An interpersonal conflictb** | 4.7% | - | - | - | -.02 | .02 | .25\* | .11\* | -.02 | - |  |  |  |  |  |  |
| 1. **Loved one diedb** | 16.9% | - | - | - | .0 | .01 | .5\* | .12\* | .1\* | .06\* | - |  |  |  |  |  |
| 1. **Change living situationb** | 2.5% | - | - | - | -.01 | .01 | .18\* | .13\* | .02 | .28\* | .15\* | - |  |  |  |  |
| 1. **Health change loved-oneb** | 2.7% | - | - | - | -.05 | .01 | .19\* | -.05 | .01 | .04 | -.03 | .03 | - |  |  |  |
| 1. **Social loneliness** | 25.15 | 27.07 | 0 | 100 | -.06 | -.07\* | .09\* | .14\* | .11\* | .11\* | -.07\* | .04 | .04 | - |  |  |
| 1. **Emotional loneliness** | 22.73 | 26.75 | 0 | 100 | .1\* | .11\* | .22\* | .18\* | .25\* | .15\* | .03 | .07\* | .08\* | .31\* | - |  |
| 1. **SWIO** | 76.9 | 18.62 | 2.78 | 100 | -0.5 | -.09\* | -.21\* | -.24\* | -.32\* | -.13\* | .02 | -.06 | -.09\* | -.39\* | -.56\* | - |

**Supplement 1.** Descriptive statistics and correlations among study variables

Note: a0=male, 1=female; b0=negative event not experienced, 1=negative event experienced; \**p*<0.05

**Supplement 2.** Interaction effects between social, emotional, overall loneliness, and negative life events on well-being (N=770)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Dependent variable: Well-being** | | |
|  | **Moderator: Social loneliness**  B (95% CI) | **Moderator: Emotional loneliness**  B (95% CI) | **Moderator: Overall loneliness**  B (95% CI) |
| **Experiencing at least one negative life event** | **-3.93\* (-7.21; -0.65)** | -2.35 (-5.32; 0.61) | -1.5 (-4.76; 1.72) |
| Moderator variable | **-0.21\* (-0.28; -0.15)** | **-0.35\* (-0.41; -0.28)** | **-0.43\* (-0.51; -0.36)** |
| Interaction | **-0.1\* (-0.18; -0.01)** | -0.05 (-0.14; 0.03) | -0.09 (-0.19; 0.01) |
| **Experiencing an interpersonal conflict** | 0.7 (-7.88; 9.27) | 0.19 (-7.70; 8.08) | -0.28 (-8.36; 7.79) |
| Moderator variable | **-0.25\* (-0.3; -0.2)** | **-0.37\* (-0.42; -0.33)** | **-0.48\* (-0.54; -0.43)** |
| Interaction | **-0.24\* (-0.41; -0.06)** | -0.11 (-0.26; 0.04) | -0.09 (-0.25; 0.08) |
| **Loved one died** | -0.12 (-4.31; 4.06) | 1.92 (-2.01; 5.85) | 1.73 (-2.52; 5.97) |
| Moderator variable | **-0.27\* (-0.32; -0.22)** | **-0.39\* (-0.43; -0.34)** | **-0.49\* (-0.54; -0.44)** |
| Interaction | -0.00 (-0.12; 0.12) | 0.00 (-0.11; 0.11) | -0.06 (-0.19; 0.08) |
| **Change living situation** | 7.00 (-5.08; 19.09) | 1.95 (-8.57; 12.47) | 2.85 (-8.03; 13.74) |
| Moderator variable | **-0.26\* (-0.31; -0.22)** | **-0.38\* (-0.43; -0.34)** | **-0.49\* (-0.54; -0.44)** |
| Interaction | **-0.38\* (-0.68; -0.08)** | -0.10 (-0.33; 0.12) | -0.14 (-0.4; 0.11) |
| **Health change loved one** | -9.43 (-21.3; 2.43) | -8.21 (-19.54; 3.12) | -0.75 (-15.49; 13.98) |
| Moderator variable | **-0.27\* (-0.32; -0.23)** | **-0.39\* (-0.43; -0.35)** | **-0.49\* (-0.54; -0.44)** |
| Interaction | 0.02 (-0.28; 0.32) | 0.09 (-0.17; 0.35) | -0.14 (-0.54; 0.25) |
| **Change in financial situation** | -1.58 (-7.96; 4.8) | -5.41 (-11.51; 0.69) | -2.72 (-3.93; 9.37) |
| Moderator variable | **-0.22\* (-0.27; -0.17)** | **-0.36\* (-0.4; -0.31)** | **-0.44\* (-0.49; -0.39)** |
| Interaction | **-0.29\* (-0.42; -0.16)** | -0.12 (-0.24; 0.01) | **-0.31\* (-0.46; -0.16)** |
| **Health deteriorated** | **-7.52\* (-11.26; -3.78)** | **-6.1\* (-9.61; -2.49)** | **-4.13\* (-7.95; -0.31)** |
| Moderator variable | **-0.21\* (-0.26; -0.15)** | **-0.33\* (-0.38; -0.28)** | **-0.41\* (-0.47; -0.35)** |
| Interaction | **-0.14\* (-0.23; -0.05)** | -0.08 (-0.17; 0.01) | **-0.15\* (-0.25; -0.05)** |

*Note:* \*=p<0.05; **\* Bold** are significant (moderating) effects; ME=main effect. All models controlled for age and gender; *B*=unstandardized regression coefficients; CI=confidence interval.

**Suppelement 3.** Analyses of social and emotional loneliness mediating the link between negative life events and well-being with direct effects (N=770)

|  |  |  |  |
| --- | --- | --- | --- |
| **Negative events** |  | **Coefficient (95% CI)** | **% Mediated** |
| **Experiencing at least one negative life event** |  |  |  |
| Overall effect |  | **-7.81 (-10.42; -5.21)** |  |
| Direct effect |  | **-3.23 (-5.41; -1.06)** |  |
| Indirect effects | Overall loneliness | **-4.58 (-6.29; -2.98)** | **58.7%** |
|  | Emotional loneliness | **-3.65 (-5.05; -2.33)** | **46.8%** |
|  | Social loneliness | **-0.94 (-1.72; -0.27)** | **12.1%** |
| **Interpersonal conflict** |  |  |  |
| Overall effect |  | **-11.62 (-17.79; -5.45)** |  |
| Direct effect |  | -3.1 (-8.14; 1.96) |  |
| Indirect effects | Overall loneliness | **-8.53 (-14.15; -3.12)** | **73.4%** |
|  | Emotional loneliness | **-6.29 (-10.57; -2.41)** | **54.1%** |
|  | Social loneliness | **-2.24 (-4.36; -0.44)** | **19.3%** |
| **Loved one died** |  |  |  |
| Overall effect |  | 1.2 (-2.31; 4.7) |  |
| Direct effect |  | 1.0 (-1.8; 3.85) |  |
| Indirect effects | Overall loneliness | 0.17 (-1.9; 2.22) |  |
|  | Emotional loneliness | -0.66 (-2.38; 1.0) |  |
|  | Social loneliness | 0.83 (-0.0; 1.7) |  |
| **Change living situation** |  |  |  |
| Overall effect |  | -6.49 (-14.95; 1.96) |  |
| Direct effect |  | -1.27 (-8.08; 5.53) |  |
| Indirect effects | Overall loneliness | -5.22 (-12.62; 1.1) |  |
|  | Emotional loneliness | -4.18 (-10.08; 0.81) |  |
|  | Social loneliness | -1.04 (-3.14;0.86) |  |
| **Health change loved one** |  |  |  |
| Overall effect |  | **-10.39 (-18.43; -2.34)** |  |
| Direct effect |  | -4.81 (-11.3; 1.68) |  |
| Indirect effects | Overall loneliness | **-5.58 (-9.7; -1.6)** | **53.7%** |
|  | Emotional loneliness | **-4.63 (-8.39; -0.89)** | **44.6%** |
|  | Social loneliness | -0.94 (-2.93; 0.83) | 9% |
| **Change in financial situation** |  |  |  |
| Overall effect |  | **-15.63 (-20.2; -11.07)** |  |
| Direct effect |  | **-8.14 (-11.94; -4.35)** |  |
| Indirect effects | Overall loneliness | **-7.49 (-10.82; -4.36)** | **47.9%** |
|  | Emotional loneliness | **-5.22 (-8.03; -2.71)** | **33.4%** |
|  | Social loneliness | **-2.27 (-3.91; -0.92)** | **14.5%** |
| **Health deteriorated** |  |  |  |
| Overall effect |  | **-13.43 (-16.32; -10.55)** |  |
| Direct effect |  | **-7.84 (-10.28; -5.39)** |  |
| Indirect effects | Overall loneliness | **-5.6 (-7.71; -3.68)** | **41.7%** |
|  | Emotional loneliness | **-4.36 (-6.02; -2.85)** | **32.5%** |
|  | Social loneliness | **-1.23 (-2.17; -0.48)** | **9.2%** |

Note: Results in **bold** are statistically significant (p<0.05). All models were adjusted for age and sex. The percentage mediated information was only performed when the overall effect was significant.

**Supplement 3.** Moderated mediated results for negative life events on wellbeing, through emotional loneliness across levels of social loneliness with direct effects (N=770)

|  |  |  |
| --- | --- | --- |
| **Negative events** |  | **Coefficient (95% CI)** |
| **Experiencing at least one negative life event** |  |  |
| Direct effect | Low social loneliness | -2.36 (-5.33; 0.61) |
|  | Middle social loneliness | **-2.94 (-5.20; -0.67)** |
|  | High social loneliness | **-4.38 (-7.84; -0.92)** |
| Indirect effects | Low social loneliness | **-1.92 (-3.32; -0.75)** |
|  | Middle social loneliness | **-2.56 (-3.74; -1.51)** |
|  | High social loneliness | **-4.54 (-7.33; -1.86)** |
| **Interpersonal conflict** |  |  |
| Direct effect | Low social loneliness | -0.95 (-8.47; 6.57) |
|  | Middle social loneliness | -1.38 (-7.25; 4.49) |
|  | High social loneliness | -2.44 (-8.69; 3.80) |
| Indirect effects | Low social loneliness | 0.93 (-2.06; 3.79) |
|  | Middle social loneliness | -1.42 (-3.96; 0.67) |
|  | High social loneliness | **-9.56 (-15.14; -4.32)** |
| **Death of a loved one** |  |  |
| Direct effect | Low social loneliness | 1.89 (-1.74; 5.52) |
|  | Middle social loneliness | 1.06 (-1.8; 3.92) |
|  | High social loneliness | -1.01 (-5.79; 3.78) |
| Indirect effects | Low social loneliness | **-1.63 (-3.36; -0.00)** |
|  | Middle social loneliness | -1.25 (-2.74; 0.16) |
|  | High social loneliness | 0.28 (-4.38; 4.17) |
| **Change living situation** |  |  |
| Direct effect | Low social loneliness | 2.15 (-8.43; 12.72) |
|  | Middle social loneliness | 0.65 (-7.07; 8.37) |
|  | High social loneliness | -3.1 (-13.11; 6.91) |
| Indirect effects | Low social loneliness | 2.96 (-0.3; 7.46) |
|  | Middle social loneliness | -0.16 (-2.91; 3.4) |
|  | High social loneliness | **-11.18 (-18.39; -1.8)** |
| **Health change loved one** |  |  |
| Direct effect | Low social loneliness | -2.32 (-12.76; 8.12) |
|  | Middle social loneliness | -4.11 (-11.62; 3.41) |
|  | High social loneliness | -8.57 (-18.2; 1.05) |
| Indirect effects | Low social loneliness | **-7.09 (-13.44; -1.59)** |
|  | Middle social loneliness | **-5.63 (-9.97; -1.35)** |
|  | High social loneliness | 0.38 (-4.97; 8.47) |
| **Change in financial situation** |  |  |
| Direct effect | Low social loneliness | 1.37 (-4.25; 6.99 |
|  | Middle social loneliness | -2.94 (-7.31; 1.42) |
|  | High social loneliness | **-13.73 (-18.28; -9.17)** |
| Indirect effects | Low social loneliness | **-2.99 (-6.34; -0.29)** |
|  | Middle social loneliness | **-3.38 (-6.08; -1.05)** |
|  | High social loneliness | **-4.45 (-8.22; -0.95)** |
| **Health deteriorated** |  |  |
| Direct effect | Low social loneliness | **-5.65 (-9.09; -2.21)** |
|  | Middle social loneliness | **-6.94 (-9.56; -4.33)** |
|  | High social loneliness | **-10.16 (-13.79; -6.54)** |
| Indirect effects | Low social loneliness | **-2.33 (-4.12; -0.79)** |
|  | Middle social loneliness | **-3.01 (-4.5; -1.68)** |
|  | High social loneliness | **-5.07 (-7.85; -2.54)** |

Note: Results in bold are statistically significant (p<0.05).

All models were adjusted for age and sex.