Supplementary Material

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# Methods

## Instructions for Expressive Writing (A) and Neutral Writing (B)

***Writing Exercise A - Day 1***

Instructions:

In narrative form, please write constantly without stopping for 15 minutes about the topic. Provide as much factual detail and description as possible.

Day 1 Topic: Fears

What are your worst fears due to the flood?

What has helped you deal with these worst fears?

***Writing Exercise A - Day 2***

Instructions:

In narrative form, please write constantly without stopping for 15 minutes about the topic. Provide as much factual detail and description as possible.

Day 2 Topic: Relationships

Has the flood caused any changes in your personal relationship(s) with another person or persons? What is (are) the worst examples(s)?

What has helped or is helping you deal with these relationship(s) changes?

***Writing Exercise A - Day 3***

Instructions:

In narrative form, please write constantly without stopping for 15 minutes about the topic. Provide as much factual detail and description as possible.

Day 3 Topic: Traumatic Experiences

What is the most traumatic, upsetting experience of your entire life, especially that you have never discussed in great detail with others?

What helped you deal with this experience?

***Writing Exercise A - Day 4***

Instructions:

In narrative form, please write constantly without stopping for 15 minutes about the topic. Provide as much factual detail and description as possible.

Day 4 Topic: Conflicts/Problems

What are the worst conflicts or problems that you have ever experienced or are experiencing now?

What helped you deal with this situation?

***Writing Exercise B - Day 1***

Instructions:

In narrative form, please write constantly without stopping for 15 minutes about the topic. Provide as much factual detail and description as possible.

Day 1 Topic: Exercise

Describe in great detail the type of exercise you do. What exercise do you engage in? How often? With whom? When specifically? How long do you exercise? Have you always exercised? Has your exercise pattern changed at all lately? Please describe. What are you exercise goals? Why do you exercise?

***Writing Exercise B - Day 2***

Instructions:

In narrative form, please write constantly without stopping for 15 minutes about the topic. Provide as much factual detail and description as possible.

Day 2 Topic: Diet

Describe in great detail what you have eaten today. When do you eat? Where do you eat? What do you typically eat for each meal? With whom do you eat? Do you prepare your own food? Does someone else prepare the food you eat? Do you do your own shopping for food? Where do you shop? Does someone else shop for food? Do you plan your meals before shopping if you or someone else does the shopping? Is your eating today typical of your regular patterns of eating? What are your "food goals"? Has your eating pattern changed at all lately? Please describe.

***Writing Exercise B - Day 3***

Instructions:

In narrative form, please write constantly without stopping for 15 minutes about the topic. Provide as much factual detail and description as possible.

Day 3 Topic: General Health

Please describe your general health. Have you generally been healthy throughout your life so far? If not, what specific health situations would you say have interfered with your general good health? When did these situations occur or are they ongoing? How were these situations treated? Was the treatment effective? Have you ever had surgery? If so, please describe the situation/situations that led to you having surgery. Are your immunizations up to date? Are you under regular health care? How often and for what situations?

***Writing Exercise B - Day 4***

Instructions:

In narrative form, please write constantly without stopping for 15 minutes about the topic. Provide as much factual detail and description as possible.

Day 4 Topic: Work

Please describe the type of work you are involved in on a day to day basis. How long have you done that type of work? Will you continue to do that type of work? Are you satisfied with your work? What plans do you have to change/modify the type of work you are currently doing and why? Did your type of work require preparation/training/education? If so, for how long and where? Do you have plans for any further education? Why?

## Post-Writing Questionnaires

**Daily Post-Writing Questionnaire**

*Instruction: For each of the items below, please indicate to what degree (between 1 and 4) you are currently experiencing the following:*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | not at all 1 | 2 | 3 | a great deal 4 |
| Racing heart | [ ]  | [ ]  | [ ]  | [ ]  |
| Upset stomach | [ ]  | [ ]  | [ ]  | [ ]  |
| Headache | [ ]  | [ ]  | [ ]  | [ ]  |
| Dizziness | [ ]  | [ ]  | [ ]  | [ ]  |
| Shortness of breath | [ ]  | [ ]  | [ ]  | [ ]  |
| Cold hands | [ ]  | [ ]  | [ ]  | [ ]  |
| Sweaty hands | [ ]  | [ ]  | [ ]  | [ ]  |
| Pounding heart | [ ]  | [ ]  | [ ]  | [ ]  |
| Nervous | [ ]  | [ ]  | [ ]  | [ ]  |
| Sad | [ ]  | [ ]  | [ ]  | [ ]  |
| Guilty | [ ]  | [ ]  | [ ]  | [ ]  |
| Happy | [ ]  | [ ]  | [ ]  | [ ]  |
| Contented | [ ]  | [ ]  | [ ]  | [ ]  |
| Fatigued | [ ]  | [ ]  | [ ]  | [ ]  |
| Constrained | [ ]  | [ ]  | [ ]  | [ ]  |
| Anxious | [ ]  | [ ]  | [ ]  | [ ]  |

**Overall Post-Writing Questionnaire after Day 4**

*Instruction: In answering the following questions, consider all four days of your writing.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Overall, how personal was what you wrote? | Not personal 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | Personal 7[ ]  |
| Prior to the study, how much had you told other people about what you wrote: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| Overall, how much did you reveal your emotions in what you wrote: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| How much have you actively held back from telling others about what you wrote: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| Prior to the experiment, how much had you wanted to talk with someone about what you wrote: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| Over the last 4 days, how difficult has it been for you to write: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| In general, how sad or depressed have you felt over the last 4 days: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| In general, how happy have you felt over the last 4 days: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| During your normal day, to what degree have you thought about this writing since it began: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| Since the beginning of the study, during the hours that you were not involved in the experiment, to what degree have you thought about the topics that you wrote about: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| Before the study ever began, to what degree did you think about the topics you wrote about: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| How important has it been to you that your writing was anonymous: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | A great deal 7[ ]  |
| To what degree would you like other people (who you don’t know) to read your anonymous writing: | Would not like it at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | Would like it a great deal 7[ ]  |
| To what degree would you like to have your writings thrown away without anyone ever reading them: | Would not like it at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | Would like it a great deal 7[ ]  |
| To what degree has this writing exercise been valuable or meaningful for you: | Not at all 1[ ]  | 2[ ]  | 3[ ]  | 4[ ]  | 5[ ]  | 6[ ]  | Extremely valuable/ meaningful 7[ ]  |
| Briefly below, describe how you feel about what you wrote during this four-day writing exercise: |
| In your own words, what do you think this study is trying to demonstrate: |
| Any comments that you have about the research study would be greatly appreciated: |

# Results

Figure S1: Residuals from analysis of covariance of panic at 2 months 

Panic at 2 months as a function of intervention group, baseline score, objective hardship, peritraumatic distress and time since the hurricane (from 20 multiply imputed datasets, stacked for visualization). Baseline and 2-month scores of panic are log-transformed.

Figure S2: Residuals from analysis of covariance of ill temper at 2 months



Ill temper at 2 months as a function of intervention group, baseline score, objective hardship, peritraumatic distress and time since the hurricane (from 20 multiply imputed datasets, stacked for visualization). Baseline and 2-month scores of ill temper are log-transformed.

Figure S3: Cognitive appraisal moderates intervention effect on depression at 2 months post-intervention



Back-transformed, adjusted means of depression (IDAS GD) at 2 months post-intervention, as a function of cognitive appraisal and intervention group, and controlling for baseline depression score, objective hardship, peritraumatic distress and time since the hurricane. Intention-to-treat analysis pooled over 20 multiply imputed datasets. The gray zone indicates the screening cut-off for major depressive disorder. Significance: \*p < 0.05.

Figure S4: Cognitive appraisal moderates intervention effect on dysphoria at 2 months post-intervention



Back-transformed, adjusted means of dysphoria (IDAS Dy) at 2 months post-intervention, as a function of cognitive appraisal by intervention group, and controlling for baseline dysphoria score, objective hardship, peritraumatic distress and time since the hurricane. Intention-to-treat analysis pooled over 20 multiply imputed datasets. The gray zone indicates the screening cut-off for major depressive disorder. Significance: \*p < 0.05.

## Table S1: Sociodemographic characteristics of study sample vs. Houston population

|  |  |  |
| --- | --- | --- |
| Characteristic | % in sample | % in populationa |
|  |
| Education |  |  |
| High school or less | 9.5 | 44.4 |
| Some college | 29.8 | 23.5 |
| Bachelor’s degree or higher | 60.8 | 32.1 |
| Employed | 52.7 | 59.3 |
| Annual household income (USD) |  |  |
| $25,000 or less | 16.1 | 24.3 |
| $25,001 – $100,000 | 49.1 | 51.7 |
| $100,001 or more | 34.2 | 24.0 |
| Race |  |  |
| American Indian or Alaska Native | 1.2 | 0.4 |
| Asian | 3.9 | 7.3 |
| Black or African American | 12.6 | 22.5 |
| Native Hawaiian or Other Pacific Islander | 0.1 | 0.1 |
| White | 75.4 | 53.8 |
| Other or Multiracial | 6.7 | 15.9 |
| Hispanic or Latinx | 26.4 | 44.9 |

aCharacteristics of the general adult population in Houston in 2018. Source: U.S. Census Bureau (2018). *2018 American Community Survey 1-year estimates*. Retrieved from <https://www.census.gov/data.html>.

## Table S2: Baseline characteristics of completers vs. non-completers

|  |  |  |
| --- | --- | --- |
| Characteristica | Writing tasksb | 2-month follow-up |
|  | Completers(n = 498) | Non-completers(n = 210) | Completers(n = 792) | Non-completers(n = 266) |
| Age (years) | **31.20 (4.92)** | **30.41 (4.55)** | 31.12 (4.68) | 30.70 (5.17) |
| Time since hurricane (days) | 234.80 (59.74) | 237.92 (60.53) | **231.98 (59.78)** | **246.87 (60.04)** |
| Time since conception (days) | 365.61 (119.20) | 353.62 (126.48) | 359.11 (117.74) | 369.79 (128.83) |
| Impact of Event Scale-Revised | **16.68 (18.33)** | **20.13 (19.76)** | **17.14 (18.17)** | **19.82 (19.13)** |
| IDAS Depression | 43.47 (14.19) | 44.68 (14.48) | 43.25 (13.96) | 45.32 (14.84) |
| IDAS Dysphoria | 19.98 (8.62) | 20.56 (8.72) | 19.78 (8.48) | 20.97 (8.91) |
| IDAS Panic | 10.76 (4.71) | 11.34 (5.92) | **10.72 (4.62)** | **11.96 (6.40)** |
| IDAS Ill Temper | 8.40 (4.14) | 8.45 (4.45) | **8.21 (4.06)** | **8.94 (4.73)** |
| IDAS Well-Being | 20.29 (6.83) | 19.63 (6.99) | 20.24 (6.97) | 19.89 (7.24) |
| Harvey Objective Stress Scale | 29.73 (27.99) | 33.43 (29.2) | **29.54 (27.35)** | **34.29 (29.93)** |
| Peritraumatic Distress Inventory | 18.23 (11.15) | 18.78 (11.7) | 17.85 (10.99) | 19.43 (12.04) |
| Education |  |  |  |  |
| High school or less | **42 (8.4)** | **30 (14.3)** | **59 (7.4)** | **41 (15.4)** |
| Some college | **125 (25.1)** | **80 (38.1)** | **229 (28.9)** | **86 (32.3)** |
| Bachelor’s degree or higher | **331 (66.5)** | **100 (47.6)** | **504 (63.6)** | **139 (52.3)** |
| Married or partnered | 446 (89.6) | 178 (85.2) | 706 (89.3) | 228 (85.7) |
| Employed | 254 (51.0) | 109 (51.9) | 418 (52.8) | 139 (52.3) |
| Household income (USD) |  |  |  |  |
| $25,000 or less | 76 (15.4) | 43 (20.5) | **111 (14.1)** | **59 (22.2)** |
| $25,001 – $100,000 | 243 (49.2) | 104 (49.5) | **413 (52.4)** | **111 (41.7)** |
| $100,001 or more | 175 (35.4) | 63 (30.0) | **264 (33.5)** | **96 (36.1)** |
| Race |  |  |  |  |
| American Indian or Alaska Native | 6 (1.2) | 3 (1.4) | **4 (0.5)** | **9 (3.4)** |
| Asian | 20 (4.0) | 9 (4.3) | **33 (4.2)** | **8 (3.0)** |
| Black or African American | 55 (11.1) | 34 (16.2) | **91 (11.5)** | **42 (15.8)** |
| Native Hawaiian or Other Pacific Islander | 0 (0.0) | 0 (0.0) | **1 (0.1)** | **0 (0.0)** |
| White | 384 (77.3) | 148 (70.5) | **605 (76.8)** | **190 (71.4)** |
| Other or Multiracial | 32 (6.4) | 16 (7.6) | **54 (6.9)** | **17 (6.4)** |
| Hispanic or Latinx | 120 (24.1) | 58 (27.8) | 208 (26.4) | 70 (26.3) |
| Pregnant during hurricane | 421 (89.4) | 146 (84.9) | 667 (88.8) | 176 (84.2) |
| Negative cognitive appraisal | **304 (61.0)** | **154 (73.3)** | 502 (63.4) | 182 (68.4) |

 aCharacteristics are presented as mean (standard deviation) in the upper section, and number of cases (% percent) in the lower section. bAmong participants of the expressive and neutral writing groups. Bolded values indicate variables that significantly differ between completers and non-completers.

## Table S3: Means and analyses of covariance of outcomes at 2 months post-intervention (fully adjusted models)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Means (95% confidence intervals) | *F* | df | *p* | Partial η2 |
| Expressive writing | Neutral writing | No writing |
| *Primary outcome* |
| Posttraumatic stress | 11.6 (10.4, 13.0) | 10.5 (9.3, 11.8) | 11.3 (10.2, 12.6) | 0.79 | 2, 367 | 0.456 | 0.002 |
| *Secondary outcomes* |
| Depression | 40.3 (39.0, 41.6) | 40.4 (39.2, 41.7) | 39.5 (38.3, 40.7) | 0.70 | 2, 608 | 0.497 | 0.002 |
| Dysphoria | 18.6 (17.8, 19.4) | 18.4 (17.8, 19.4) | 17.8 (17.1, 18.5) | 1.28 | 2, 504 | 0.279 | 0.003 |
| Panic | 10.3 (9.95, 10.6 | 10.4 (10.1, 10.7 | 10.2 (9.9, 10.5) | 0.35 | 2, 693 | 0.706 | 0.001 |
| Ill temper | 7.97 (7.65, 8.31) | 7.90 (7.58, 8.23) | 7.63 (7.33, 7.94) | 1.27 | 2, 366 | 0.281 | 0.004 |
| Well-being | 21.8 (21.0, 22.5) | 22.2 (21.5, 22.8) | 21.4 (20.7, 22.1) | 1.16 | 2, 405 | 0.313 | 0.003 |

Intention-to-treat analyses pooled over 20 multiply imputed datasets. All outcomes except well-being were log-transformed in the models. Means are adjusted for baseline score, objective hardship, peritraumatic distress and time since the hurricane, and are back-transformed to the original scales.

## Table S4: Means and analyses of covariance of outcomes at 2 months post-intervention (subgroup with clinical posttraumatic stress)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Means (95% confidence intervals) | *F* | df | *p* | Partial η2 |
| Expressive writing | Neutral writing | No writing |
| *Primary outcome* |
| Posttraumatic stress | 28.5 (24.1, 33.6) | 27.6 (23.0, 33.0) | 29.2 (24.6, 34.6) | 0.11 | 2, 1376 | 0.896 | 0.002 |
| *Secondary outcomes* |
| Depression | 50.7 (47.4, 54.1) | 50.0 (46.4, 53.8) | 49.8 (46.3, 53.6) | 0.08 | 2, 1419 | 0.919 | 0.002 |
| Dysphoria | 24.0 (21.9, 26.4) | 23.3 (21.0, 25.8) | 23.8 (21.6, 26.2) | 0.21 | 2, 1386 | 0.812 | 0.003 |
| Panic | 13.6 (12.5, 14.9) | 14.3 (13.0, 15.6) | 12.8 (11.7, 13.9) | 1.51 | 2, 390 | 0.222 | 0.019 |
| Ill temper | 10.1 (9.17, 11.2) | 10.4 (9.4, 11.6) | 9.8 (8.8, 10.9) | 0.38 | 2, 987 | 0.682 | 0.005 |
| Well-being | 19.7 (18.3, 21.1) | 20.5 (19.0, 22.1) | 19.2 (17.7, 20.7) | 0.58 | 2, 325 | 0.559 | 0.010 |

Intention-to-treat analyses pooled over 20 multiply imputed datasets, restricted to participants with clinical levels of posttraumatic stress at baseline. All outcomes except well-being were log-transformed in the models. Means are adjusted for baseline score and are back-transformed to the original scales.

## Table S5: Means and analyses of covariance of outcomes at 2 months post-intervention (per protocol)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Means (95% confidence intervals) | *F* | df | *p* | Partial η2 |
| Expressive writing | Neutral writing | No writing |
| *Primary outcome* |
| Posttraumatic stress | 11.9 (10.3, 13.8) | 10.6 (9.2, 12.3) | 11.0 (9.6, 12.5) | 0.64 | 2, 608 | 0.526 | 0.002 |
| *Secondary outcomes* |
| Depression | 39.8 (38.3, 41.3) | 39.9 (38.5, 41.4) | 39.0 (37.7, 40.3) | 0.53 | 2, 602 | 0.591 | 0.002 |
| Dysphoria | 18.3 (17.5, 19.2) | 18.3 (17.5, 19.2) | 17.6 (16.9, 18.4) | 0.99 | 2, 602 | 0.371 | 0.003 |
| Panic | 9.8 (9.5, 10.2) | 10.1 (9.8, 10.5) | 10.1 (9.8, 10.4) | 0.99 | 2, 603 | 0.373 | 0.003 |
| Ill temper | 7.6 (7.2, 8.0) | 7.9 (7.5, 8.3) | 7.6 (7.2, 7.9) | 1.08 | 2, 602 | 0.341 | 0.004 |
| Well-being | 22.0 (21.1, 22.8) | 22.9 (22.1, 23.7) | 22.0 (21.3, 22.7) | 1.58 | 2, 602 | 0.206 | 0.005 |

Analyses restricted to intervention completers with no missing data. All outcomes except well-being were log-transformed in the models. Means are adjusted for baseline score and are back-transformed to the original scales.

## Table S6: Putative moderators of intervention effects on outcomes at 2 months post-intervention (analyses of covariance)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Moderator | *F* | df | *p* | Partial η2 |
| *Outcome: Posttraumatic stress* |
| Baseline score | 0.07 | 2, 2244 | 0.930 | 0.000 |
| Objective hardship | 0.27 | 2, 1559 | 0.767 | 0.001 |
| Peritraumatic distress | 0.50 | 2, 1620 | 0.610 | 0.001 |
| Time since the hurricane | 2.04 | 2, 695 | 0.130 | 0.005 |
| Cognitive appraisal | 0.43 | 2, 532 | 0.649 | 0.001 |
| Resilience | 0.31 | 2, 987 | 0.734 | 0.001 |
| Timing in pregnancy | 0.22 | 2, 1166 | 0.799 | 0.001 |
| Educational attainment | 0.91 | 14, 1030 | 0.544 | 0.016 |
| Prior journal keeping | 0.36 | 4, 2139 | 0.839 | 0.002 |
| Household income | 0.34 | 4, 844 | 0.854 | 0.002 |
| Employment | 0.22 | 2, 2060 | 0.802 | 0.001 |
| Race | 1.97 | 2, 1027 | 0.139 | 0.005 |
| Ethnicity | 0.43 | 2, 525 | 0.653 | 0.001 |
| *Outcome: Depression* |
| Baseline score | 1.46 | 2, 3027 | 0.233 | 0.003 |
| Objective hardship | 0.92 | 2, 1165 | 0.398 | 0.002 |
| Peritraumatic distress | 0.25 | 2, 671 | 0.778 | 0.001 |
| Time since the hurricane | 0.23 | 2, 1522 | 0.791 | 0.001 |
| Cognitive appraisal | 3.77 | 2, 1375 | **0.023** | 0.008 |
| Resilience | 1.54 | 2, 2088 | 0.215 | 0.003 |
| Timing in pregnancy | 0.42 | 2, 543 | 0.657 | 0.001 |
| Educational attainment | 0.38 | 14, 441 | 0.980 | 0.009 |
| Prior journal keeping | 0.25 | 4, 4189 | 0.909 | 0.001 |
| Household income | 0.40 | 4, 315 | 0.812 | 0.002 |
| Employment | 0.31 | 2, 799 | 0.735 | 0.001 |
| Race | 0.53 | 2, 480 | 0.590 | 0.002 |
| Ethnicity | 1.01 | 2, 324 | 0.364 | 0.003 |

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Table S6 (continued):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Moderator | *F* | df | *p* | Partial η2 |
| *Outcome: Dysphoria* |
| Baseline score | 0.89 | 2, 1012 | 0.411 | 0.002 |
| Objective hardship | 0.79 | 2, 775 | 0.453 | 0.002 |
| Peritraumatic distress | 0.15 | 2, 1290 | 0.864 | 0.001 |
| Time since the hurricane | 0.22 | 2, 741 | 0.803 | 0.001 |
| Cognitive appraisal | 4.81 | 2, 1752 | **0.008** | 0.010 |
| Resilience | 1.34 | 2, 2189 | 0.263 | 0.003 |
| Timing in pregnancy | 0.58 | 2, 547 | 0.557 | 0.002 |
| Educational attainment | 0.55 | 14, 289 | 0.901 | 0.013 |
| Prior journal keeping | 0.25 | 4, 769 | 0.909 | 0.002 |
| Household income | 0.40 | 4, 371 | 0.809 | 0.003 |
| Employment | 0.69 | 2, 708 | 0.501 | 0.002 |
| Race | 0.15 | 2, 835 | 0.858 | 0.001 |
| Ethnicity | 0.91 | 2, 527 | 0.405 | 0.003 |
| *Outcome: Panic* |
| Baseline score | 1.51 | 2, 136 | 0.225 | 0.006 |
| Objective hardship | 1.87 | 2, 851 | 0.152 | 0.005 |
| Peritraumatic distress | 0.93 | 2, 195 | 0.398 | 0.003 |
| Time since the hurricane | 0.98 | 2, 891 | 0.374 | 0.003 |
| Cognitive appraisal | 0.77 | 2, 1114 | 0.463 | 0.002 |
| Resilience | 0.22 | 2, 380 | 0.804 | 0.001 |
| Timing in pregnancy | 2.65 | 2, 599 | 0.071 | 0.006 |
| Educational attainment | 0.63 | 14, 319 | 0.843 | 0.014 |
| Prior journal keeping | 0.23 | 4, 826 | 0.920 | 0.002 |
| Household income | 0.60 | 4, 284 | 0.665 | 0.004 |
| Employment | 0.64 | 2, 929 | 0.529 | 0.002 |
| Race | 0.11 | 2, 956 | 0.899 | 0.001 |
| Ethnicity | 1.84 | 2, 922 | 0.159 | 0.004 |

(continued on next page 🡪 )

Table S6 (continued):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Moderator | *F* | df | *p* | Partial η2 |
| *Outcome: Ill temper* |
| Baseline score | 0.28 | 2, 369 | 0.755 | 0.001 |
| Objective hardship | 0.13 | 2, 2158 | 0.880 | 0.000 |
| Peritraumatic distress | 0.42 | 2, 314 | 0.656 | 0.002 |
| Time since the hurricane | 0.245 | 2, 680 | 0.783 | 0.001 |
| Cognitive appraisal | 0.66 | 2, 1170 | 0.517 | 0.002 |
| Resilience | 0.21 | 2, 516 | 0.810 | 0.001 |
| Timing in pregnancy | 1.25 | 2, 590 | 0.287 | 0.003 |
| Educational attainment | 0.56 | 14, 655 | 0.900 | 0.011 |
| Prior journal keeping | 0.73 | 4, 183 | 0.571 | 0.006 |
| Household income | 0.15 | 4, 376 | 0.964 | 0.002 |
| Employment | 0.41 | 2, 343 | 0.663 | 0.002 |
| Race | 0.31 | 2, 683 | 0.733 | 0.001 |
| Ethnicity | 0.93 | 2, 619 | 0.396 | 0.003 |
| *Outcome: Well-being* |
| Baseline score | 0.39 | 2, 313 | 0.678 | 0.002 |
| Objective hardship | 0.27 | 2, 447 | 0.766 | 0.001 |
| Peritraumatic distress | 0.06 | 2, 460 | 0.946 | 0.001 |
| Time since the hurricane | 0.38 | 2, 1423 | 0.682 | 0.001 |
| Cognitive appraisal | 0.75 | 2, 729 | 0.471 | 0.002 |
| Resilience | 0.80 | 2, 487 | 0.449 | 0.002 |
| Timing in pregnancy | 0.15 | 2, 2653 | 0.859 | 0.001 |
| Educational attainment | 0.48 | 14, 438 | 0.946 | 0.011 |
| Prior journal keeping | 0.64 | 4, 538 | 0.633 | 0.004 |
| Household income | 0.54 | 4, 317 | 0.709 | 0.004 |
| Employment | 0.28 | 2, 1176 | 0.753 | 0.001 |
| Race | 1.01 | 2, 619 | 0.365 | 0.003 |
| Ethnicity | 0.135 | 2, 2486 | 0.874 | 0.000 |

Intention-to-treat analyses pooled over 20 multiply imputed datasets. Each line of the table is for a separate model of two-way interaction between intervention group and a putative moderator. All models included the following covariates (when not already in the interaction term): baseline score, objective hardship, peritraumatic distress and time since the hurricane. Significant *p* values are bolded. Race categories were dichotomized as White versus Non-White, due to low number of participants in certain categories (c.f. Table 1).

## Table S7: Between-group effect sizes of outcomes at 2 months post-intervention, by intention to treat

|  |  |
| --- | --- |
|  | *d* (95% confidence intervals) |
| Expressive writing – Neutral writing | Expressive writing – No writing | Neutral writing – No writing |
| Posttraumatic stress | 0.10 (-0.07, 0.27) | 0.05 (-0.11, 0.21) | -0.05 (-0.21, 0.11) |
| Depression | -0.01 (-0.18, 0.16) | 0.08 (-0.08, 0.24) | 0.09 (-0.08, 0.26) |
| Dysphoria | 0.02 (-0.15, 0.20) | 0.13 (-0.04, 0.30) | 0.10 (-0.06, 0.26) |
| Panic | -0.03 (-0.21, 0.13) | 0.04 (-0.13, 0.21) | 0.07 (-0.09, 0.23) |
| Ill temper | 0.03 (-0.14, 0.21) | 0.14 (-0.03, 0.31) | 0.10 (-0.06, 0.27) |
| Well-being | -0.07 (-0.25, 0.10) | 0.05 (-0.12, 0.23) | 0.13 (-0.04, 0.29) |

Intention-to-treat analyses pooled over 20 multiply imputed datasets. All outcome scores except for well-being were log-transformed. Baseline scores were controlled for.

## Table S8: Mediated effects of expressive writing on posttraumatic stress via overall writing experiences

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Estimate | 95% CI | SE | t | df | p |
| Effect of expressive writing on posttraumatic stress at 2 months | 0.093 |  | 0.077 | 1.210 | 194 | 0.229 |
| *Mediator: Difficult* |
| Effect of expressive writing on mediator | 1.031 |  | 0.153 | 6.724 | 193 | < 0.0001 |
| Effect of mediator on posttraumatic stress at 2 months | 0.096 |  | 0.023 | 4.100 | 114 | 0.0001 |
| Average causal mediation effect | 0.106 | 0.059, 0.160 |  |  |  |  |
| Average direct effect | 0.062 | -0.089, 0.200 |  |  |  |  |
| Total effect | 0.168 | 0.010, 0.300 |  |  |  |  |
| Proportion mediated | 0.854 | 0.238, 2.780 |  |  |  |  |
| *Mediator: Depressed* |
| Effect of expressive writing on mediator | 0.314 |  | 0.133 | 2.361 | 238 | 0.019 |
| Effect of mediator on posttraumatic stress at 2 months | 0.122 |  | 0.023 | 5.216 | 252 | < 0.0001 |
| Average causal mediation effect | 0.041 | 0.012, 0.080 |  |  |  |  |
| Average direct effect | 0.132 | -0.008, 0.250 |  |  |  |  |
| Total effect | 0.173 | 0.026, 0.290 |  |  |  |  |
| Proportion mediated | 0.272 | 0.069, 0.900 |  |  |  |  |
| *Mediator: Happy* |
| Effect of expressive writing on mediator | -0.389 |  | 0.123 | -3.150 | 207 | < 0.0001 |
| Effect of mediator on posttraumatic stress at 2 months | -0.081 |  | 0.027 | -3.035 | 193 | 0.0027 |
| Average causal mediation effect | 0.028 | 0.008, 0.050 |  |  |  |  |

(continued on next page 🡪 )

Table S8 (continued):

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Estimate | 95% CI | SE | t | df | p |
| *Mediator: Happy* (continued) |
| Average direct effect | 0.138 | -0.011, 0.280 |  |  |  |  |
| Total effect | 0.166 | 0.023, 0.300 |  |  |  |  |
| Proportion mediated | 0.215 | 0.038, 0.710 |  |  |  |  |
| *Mediator: Valuable* |
| Effect of expressive writing on mediator | 0.405 |  | 0.148 | 2.742 | 116 | 0.007 |
| Effect of mediator on posttraumatic stress at 2 months | 0.076 |  | 0.028 | 2.766 | 87 | 0.007 |
| Average causal mediation effect | 0.030 | 0.009, 0.060 |  |  |  |  |
| Average direct effect | 0.139 | -0.001, 0.270 |  |  |  |  |
| Total effect | 0.169 | 0.034, 0.290 |  |  |  |  |
| Proportion mediated | 0.225 | 0.042, 0.770 |  |  |  |  |

Intention-to-treat analyses pooled over 20 multiply imputed datasets. Effects of expressive writing relative to neutral writing, mediated by overall writing experiences. Baseline posttraumatic stress scores were controlled for. Posttraumatic stress scores at baseline and at 2 months post-intervention were log-transformed.