**Revisiting the impact of singularity on the Identified Victim Effect:   
Replication and extension of Kogut and Ritov (2005a) Study 2**

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# Analysis of the original article

## Original article methods

### Independent variables of Study 2 of Kogut and Ritov (2005a)

In the original research conducted by Kogut and Ritov (2005a), all the participants were randomly assigned to one of the four conditions of 2 (single victim vs. a group of eight victims) X 2 (unidentified vs. identified victims) between-subjects experimental design. The authors performed the parametric test of ANOVA to estimate the interaction effect of identifiability and singularity on willingness to contribute and empathic emotions. We summarized the independent variables, conditions, and details of Study 2 in Table S1. The photo stimulus used for Study 2 had a group portrait of eight children consisting of four boys and four girls. Additionally, separate pictures of the same eight children were used for the identification of the single individual.

Table S1  
*Classification of the independent variables singularity and identifiability in Study 2 of Kogut and Ritov (2005a)*

| Independent Variables | Levels/Conditions | Details |
| --- | --- | --- |
| Singularity | Single | The participants read the story describing a single sick child being treated in the medical center whose life is in danger. |
| Group | The participants read the story describing a group of eight sick children who are being treated in the medical center whose lives are in danger. |
| Identifiability | Unidentified | No information is provided for the identification of the victim (s). The participants only knew the victim(s) is(are) sick and being treated in a medical center |
| Identified | Information is provided for the identification of the victim(s).   * Age: 2 years old * Name: Sharon/Avi/Ronit, Shiran/Yonatan/Rachel/Oma /Yotam * Picture: (see the image below) |

### Dependent variables of Study 2 of Kogut and Ritov (2005a)

In Study 2 of Kogut and Ritov (2005a), the dependent variables were willingness to contribute and empathic emotions. We summarized the dependent variables, conditions, and how they were measured in Table S2.

Table S2  
*Willingness to contribute and empathic emotions: Classification*

| Dependent Variables | Conditions | Items |
| --- | --- | --- |
| Willingness to Contribute | Unidentified/identified single condition | Participants were asked whether they were willing to contribute money to  save the victim(s) lives and, if so, how much money they would donate at that moment |
| Unidentified/identified group condition |
| Emphatic Emotions | Unidentified/identified single condition | The feeling of empathic concern  ‘*I felt sympathy and compassion towards the sick child.*’  (1 = not at all, 2, 3, 4, 5, 6, 7 = very much) |
| The feeling of distress  ‘*After reading the child’s story, I felt worried, upset, and sad*.’  (1 = not at all, 2, 3, 4, 5, 6, 7 = very much) |
| Unidentified/identified group condition | The feeling of empathic concern  ‘*I felt sympathy and compassion towards the sick children.*’  (1 = not at all, 2, 3, 4, 5, 6, 7 = very much) |
| The feeling of distress  ‘*After reading the children’s story, I felt worried, upset, and sad*.’  (1 = not at all, 2, 3, 4, 5, 6, 7 = very much) |

Target article results

We summarized the sample size, descriptive statistics of the sample, and descriptive statistics reported for willingness to contribute and empathic emotions in Study 2 of Kogut and Ritov (2005a) in Table S3, Table S4, and Figure S1, respectively. The value for willingness to contribute reported in the study was log-transformed from raw data since the contributions were not distributed normally. Yet, the type of log transformation was not specified.

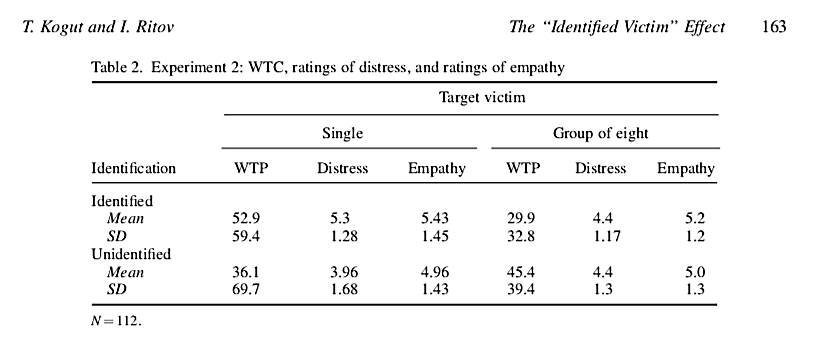
Table S3  
*The sample size of study 2 of Kogut and Ritov (2005a) before and after exclusions*

|  |  |  |
| --- | --- | --- |
| Sample size before exclusion | Sample size after exclusion | Reason for exclusion |
| 120 | 112 | Unreported |

Table S4  
*Sample descriptive of study 2 on Kogut and Ritov (2005a)*

|  |  |
| --- | --- |
| Description | Study 2 |
| Age | Unreported |
| Gender | Unreported |
| Location | Hebrew University |
| Sample Type | Undergraduate students |

Figure S1  
*Extract from Kogut and Ritov (2005a) Page 163; A summary table showing the descriptive statistics of willingness to contribute, rating of distress, and rating of empathy in study 2*



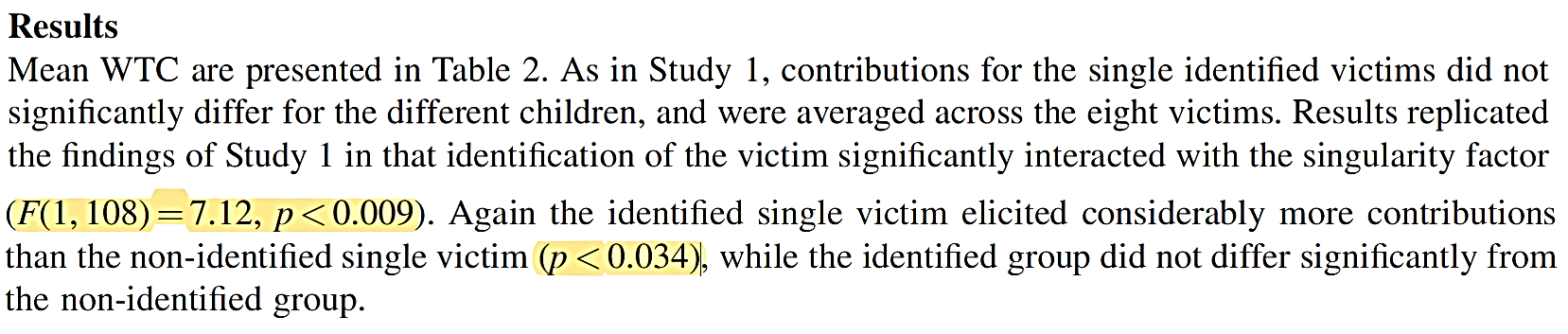
### 2x2 ANOVA: The interaction effect on willingness to contribute

The authors conducted a 2 (single victim vs. a group of eight victims) x 2 (unidentified vs. identified) between-subjects ANOVA on willingness to contribute. The results indicated a significant interaction between identifiability and singularity, *F*(1, 108) = 7.12*, p* < .009*.* The identified single victim (*M* = 52.9, SD = 59.4) elicited considerably more willingness to contribute than the non-identified single victim (*M* = 36.1. SD = 69.7), *p* < .034. On the other hand, while the unidentified group (*M* = 45.4, SD = 39.4) elicited considerably more contributions than the unidentified group (*M* = 29.9, SD = 32.8), they did not differ from each other significantly. Their findings successfully supported the main hypothesis regarding the singularity effect in identified victims, η2p = .062, 90% CI [0.01, 0.15], a strong effect. We presented the F-statistics, degrees of freedom, and *p*-value reported in study 2 of Kogut and Ritov (2005a) in Table S5 and the extract from the paper indicating the statistics in Figure S2.

Table S5  
*Summary of the statistics reported in study 2 of Kogut and Ritov (2005a)*

| Dependent Variables | Test | *F* statistic | *df* | *p* |
| --- | --- | --- | --- | --- |
| Willingness to contribute  (log-transformed) | 2X2 ANOVA:  Interaction effect of identifiability and singularity | 7.12 | 108 | < .009 |
|
|
| Post hoc comparison between the identified single and unidentified single condition | Unreported | Unreported | < .034 |
| Distress | 2X2 ANOVA:  Interaction effect of identifiability and singularity | Unreported | Unreported | Significant but unreported |
| Post hoc comparison between the identified single and unidentified single condition | Unreported | Unreported | < .001 |

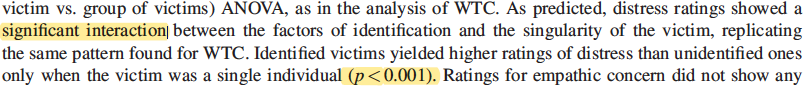
Figure S2  
*Extract from Kogut and Ritov (2005a) Pages 162-163; the first paragraph shows the result of interaction effect on willingness to contribute and posthoc comparison*



### 2x2 ANOVA: The interaction effect on empathic emotions

The authors conducted a 2 (single victim vs. a group of eight victims) x 2 (unidentified vs. identified) between-subjects ANOVA on empathic emotions. The authors found a significant interaction effect of identifiability and the singularity on the distress that supported their hypothesis, yet the authors provided no statistics about the result of the ANOVA test (refer to Table S5). Posthoc comparison indicated that identified victims yielded higher ratings of distress than unidentified ones only when the victim was a single individual (*p* < .001). On the other hand, ratings for empathic concern did not show any significant main effects or interactions. We presented the extract from the paper indicating the statistics in Figure S3.

Figure S3  
*Extract from Kogut and Ritov (2005a) Page 163; The second paragraph shows the significant interaction effect on distress and posthoc comparison*



### Pearson Correlation: The relationship between empathic emotions and willingness to contribute

The authors correlated ratings of empathic emotions with the willingness to contribute, and they found that the ratings of distress significantly correlated with willingness to contribute, *r* = 0.30, *p* < .01, 95% CI [0.11, 0.45], while the correlation between empathic concern ratings and willingness to contribute was not significant. We presented the extract from the paper indicating the statistics in Figure S4.

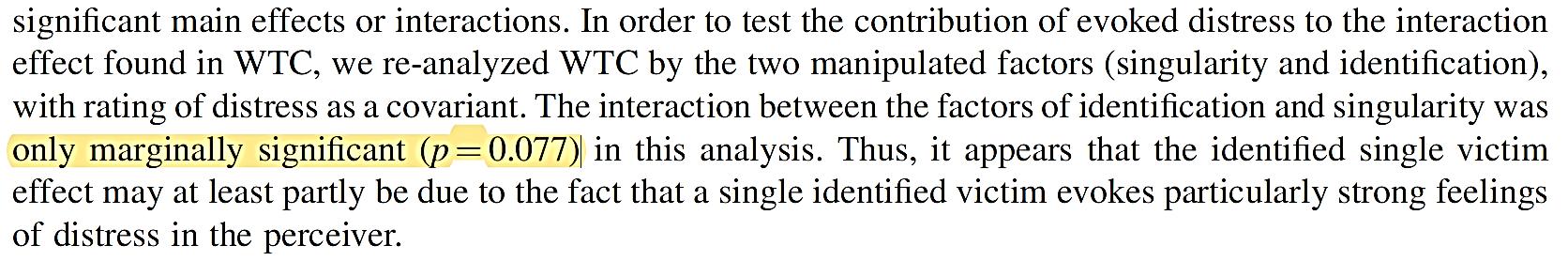
Figure S4  
*Extract from Kogut and Ritov (2005a) Page 163; The second paragraph shows the result of the correlation between empathic emotions and willingness to contribute*



### 2x2 ANCOVA: The contribution of empathic emotions to the interaction effect on willingness to contribute

In order to test the effect of evoked distress along with the interaction effect found on willingness to contribute, the authors conducted a 2 (single victim vs. a group of eight victims) x 2 (unidentified vs. identified) ANCOVA on willingness to contribute using the rating of distress as a covariant. The authors found that the interaction between the factors of identification and singularity was only marginally significant, *p* = .077, suggesting that the feelings of distress in the perceiver evoked by the single identified victim partially contributed to the identified single victim effect.

Figure S5  
*Extract from Kogut and Ritov (2005a) Page 163; The second paragraph shows the result of ancova on willingness to contribute with ratings of distress as a covariate*



## Effect size and confidence interval calculations of the original study effects

### Hypothesis 1: Interaction effect of identifiability and singularity on willingness to contribute

The hypothesis states that willingness to contribute to help an identified single victim is greater than the willingness to contribute to help an unidentified single victim, whereas willingness to contribute to groups of victims is not expected to differ for identified and unidentified targets.

With the help of the data provided by the authors, we conducted a 2 (single victim vs. a group of eight victims) x 2 (unidentified vs. identified) between-subjects ANOVA on the dependent variable willingness to contribute (see Table S6). We conducted all our analyses using JAMOVI 2.3.13 software (Jamovi, 2021). Since Jamovi does not report the confidence interval for partial eta squared values obtained from ANOVA, we used R (Lüdecke et al., 2021) to estimate the confidence interval. In Table S7, we present the confidence interval of the effect sizes.

Table S6  
*Willingness to contribute: 2 (single victim vs. a group of eight victims) x 2 (unidentified vs. identified) between-subjects ANOVA*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Measure | | Sum of Squares | | *df* | | Mean Square | | *F* | | *p* | | η² | | η²p | |
| Victim |  | 0.10 |  | 1 |  | 0.10 |  | 0.26 |  | .611 |  | 0.002 |  | 0.002 |  |
| Identifiability |  | 0.13 |  | 1 |  | 0.13 |  | 0.36 |  | .552 |  | 0.003 |  | 0.003 |  |
| Victim ✻ Identifiability |  | 2.63 |  | 1 |  | 2.63 |  | 7.12 |  | .009 |  | 0.061 |  | 0.062 |  |
| Residuals |  | 39.83 |  | 108 |  | 0.37 |  |  |  |  |  |  |  |  |  |
| *Note: The variable victim refers to the single or the group of victims in the original analysis* | | | | | | | | | | | | | | | |

Table S7  
*Willingness to contribute: Effect sizes and confidence interval*

|  |  |  |  |
| --- | --- | --- | --- |
| Measure | *F* | η²p | 90% Confidence Interval |
| Interaction effect of singularity and identifiability on WTC | 7.12 | 0.06 | [0.01, 0.15] |
| Effect of singularity on WTC | 0.26 | .002 | [0, 0.04] |
| Effect of identifiability on WTC | 0.36 | .003 | [0, 0.04] |

### Hypothesis 2a: Interaction effect on distress

The hypothesis states that people tend to experience more distress when considering an identified single victim than an unidentified single victim, whereas distress towards groups of victims is not expected to differ for identified and unidentified targets.

The original article only mentioned that the distress ratings showed a significant interaction between the factors of identification and the singularity of the victim but did not provide the F statistic, degree of freedom, and p-value of the effect. The original article only reported the mean of the distress rating for every four conditions. However, with the help of the data provided by the authors, we conducted a 2 (single victim vs. a group of eight victims) x 2 (unidentified vs. identified) between-subjects ANOVA on dependent variable distress ratings (see Table S8). We calculated the confidence interval of the partial eta squared statistic reported in ANOVA analysis from R (presented in Table S9).

Table S8  
*Distress: 2 (single victim vs. a group of eight victims) x 2 (unidentified vs. identified) between-subjects ANOVA*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Measure | | Sum of Squares | | *df* | | Mean Square | | *F* | | *p* | | η² | | η²p | |
| Victim |  | 1.68 |  | 1 |  | 1.68 |  | 0.88 |  | .349 |  | 0.007 |  | 0.008 |  |
| Identifiability |  | 12.78 |  | 1 |  | 12.78 |  | 6.73 |  | .011 |  | 0.055 |  | 0.059 |  |
| Victim ✻ Identifiability |  | 13.05 |  | 1 |  | 13.05 |  | 6.88 |  | .010 |  | 0.056 |  | 0.060 |  |
| Residuals |  | 204.95 |  | 108 |  | 1.90 |  |  |  |  |  |  |  |  |  |
| *Note: The variable victim refers to the single or the group of victims in the original analysis* | | | | | | | | | | | | | | | |

Table S9  
*Distress: Reporting of effect sizes and confidence interval*

|  |  |  |  |
| --- | --- | --- | --- |
| Measure | *F* | η²p | 90% Confidence Interval |
| Interaction effect of singularity and identifiability on distress | 6.88 | 0.06 | [0.01, 0.14] |
| Effect of singularity on distress | 0.88 | .008 | [0, 0.06] |
| Effect of identifiability on distress | 6.73 | .059 | [0.01, 0.14] |

### Hypothesis 2b: Correlation between willingness to contribute and distress

The hypothesis states that the greater the rating of distress, the higher the willingness to contribute. The original article reported the results from Pearson correlation test, *r* = 0.30, *p* < 0.01. We summarized the results and reported the 95% confidence interval in Table S10.

Table S10  
*Pearson correlation between willingness to contribute and rating of distress*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | |  | |  | 95% Confidence Interval | | | |
| Correlation | | | *n* | | *r* | *LCI* | | | *UCI* |
| Willingness to contribute and distress | | 112 | | 0.30\*\*\* | | | 0.11 | 0.45 | | |

Note: *r* = Pearson’s *r*, \*\*\**p* <.001, *LCI*=Confidence Interval Lower Limit, *UCI*=Confidence Interval Upper Limit

Table S11  
*Kogut and Ritov (2005a) Study 2: Summary of the effects and confidence intervals*

|  |  |  |  |
| --- | --- | --- | --- |
| Corresponding Hypothesis | Effect | Effect size (η²p) | 90% Confidence Interval |
| Hypothesis 1 | The interaction effect of singularity and identifiability on willingness to contribute | 0.062 | [0.01, 0.15] |
|  | The main effect of singularity on willingness to contribute | 0.002 | [0, 0.04] |
|  | The main effect of identifiability on willingness to contribute | 0.003 | [0, 0.04] |
| Hypothesis 2a | The interaction effect of singularity and identifiability on empathic emotions | 0.060 | [0.01, 0.14] |
| Hypothesis 2b | The correlation between willingness to contribute and distress | *r* = 0.30a | [0.11, 0.45] |

*Note a:* The original article only cited the correlation. The effect sizes and the confidence intervals were calculated based on the analysis of the original data shared by the authors.

# Materials

## Procedure

See Qualtrics in the OSF folder for the full materials.

## Extension introduction and explanation

### Group belonging

We added two additional levels in independent variable identifiability, namely, identified ingroup and identified outgroup victims.

Kogut and Ritov (2007) examined whether the singularity effect of identified victims extends beyond the boundaries of group belonging. They found that identified victims elicit greater contributions than unidentified victims only when the victim is a single individual and perceived as an ingroup member. Therefore, we aimed to extend Kogut and Ritov's (2005a) study by incorporating the condition of a group belonging from Kogut and Ritov (2007)’s study. This allowed us to replicate the effects of the original study with a higher power.

### Perceived responsibility

Apart from the emotional reaction, it is suggested that perceived responsibility is another important mechanism that underlies the ingroup effect. People believe they have a greater role-dependent responsibility to help victims from the ingroup, who are psychologically closer to them.

Previous studies only examined the mediating effect of perceived responsibility in the context of identifiability and group belonging without considering the singularity of the victims. Since the current replication extended the original article by examining the effect of group belonging on the willingness to contribute to identified single victims, we aimed to further extend the replication study by considering the perceived responsibility as an additional dependent variable of the “identified ingroup single” victim effect.

We summarized the scenario presented to the participants for each of the experimental conditions in Table S12. We used the same photo of eight boys and girls used by the authors for the identified group condition for our replication analysis and summarized the stimuli used for the identified ingroup and outgroup single victim conditions in Table S13.

Table S12  
*Singularity and identifiability experimental conditions story descriptions in Study 2 of Kogut and Ritov (2005a)*

| Experimental condition | | Story description |
| --- | --- | --- |
| Single | Unidentified | There is a child being treated in a medical center whose life is in danger.  Recently a new drug was developed that cures the disease. Unfortunately, this drug is extremely expensive, and unless a sum of US$500,000 is raised soon, it will no longer be possible to save the life of the sick child. |
| Identified | Ethan/James/Michael/Jake/Emma/Emily/Charlotte/Chloe is a two-year-old sick child being treated in a medical center whose life is in danger.    Recently a new drug was developed that cures the disease. Unfortunately, this drug is extremely expensive, and unless a sum of US$500,000 is raised soon, it will no longer be possible to save the life of the sick child. |
| Identified ingroup | Ethan/James/Michael/Jake/Emma/Emily/Charlotte/Chloe is a sick two-year-old American child being treated in a medical center whose life is in danger.    Recently a new drug was developed that cures the disease. Unfortunately, this drug is extremely expensive, and unless a sum of US$500,000 is raised soon, it will no longer be possible to save the life of the sick child. |
| Identified outgroup | Vladimir/Dmitry/Sergey/Mikhail/Anastasia/Yelizaveta/Yelena/Ludmila is a two-year-old Russian sick child being treated in a medical center whose life is in danger.    Recently a new drug was developed that cures the disease. Unfortunately, this drug is extremely expensive, and unless a sum of US$500,000 is raised soon, it will no longer be possible to save the life of the sick child. |
| Group | Unidentified | There is a group of eight sick children being treated in a medical center whose lives are in danger.    Recently a new drug was developed that cures the disease. Unfortunately, this drug is extremely expensive, and unless a sum of US$500,000 is raised soon, it will no longer be possible to save the lives of sick children. |
| Identified | Ethan, James, Michael, Jake, Emma, Emily, Charlotte, and Chloe are eight two-year-old sick children who are treated in a medical center and whose lives are in danger.  Recently a new drug was developed that cures the disease. Unfortunately, this drug is extremely expensive, and unless a sum of US$500,000 is raised soon, it will no longer be possible to save the lives of sick children. |
| Identified ingroup | Ethan, James, Michael, Jake, Emma, Emily, Charlotte, and Chloe are eight two-year-old American sick children who are treated in a medical center and whose lives are in danger.    Recently a new drug was developed that cures the disease. Unfortunately, this drug is extremely expensive, and unless a sum of US$500,000 is raised soon, it will no longer be possible to save the lives of sick children. |
| Identified outgroup | Vladimir, Dmitry, Sergey, Mikhail, Anastasia, Yelizaveta, Yelena, and Ludmila, are eight two-year-old Russian sick children who are treated in a medical center whose lives are in danger.    Recently a new drug was developed that cures the disease. Unfortunately, this drug is extremely expensive, and unless a sum of US$500,000 is raised soon, it will no longer be possible to save the lives of sick children. |

Table S13  
*The names used in the single identified condition*

|  |  |  |
| --- | --- | --- |
| Child | Condition | Name |
| (Boy) | Identified | Ethan |
| Identified ingroup (American) |
| Identified outgroup (Russian) | Vladimir |
| (Boy) | Identified | James |
| Identified ingroup (American) |
| Identified outgroup (Russian) | Dmitry |
| (Boy) | Identified | Michael |
| Identified ingroup (American) |
| Identified outgroup (Russian) | Sergey |
| (Boy) | Identified | Jake |
| Identified ingroup (American) |
| Identified outgroup (Russian) | Mikhail |
| (Girl) | Identified | Emma |
| Identified ingroup (American) |
| Identified outgroup (Russian) | Anastasia |
| (Girl) | Identified | Emily |
| Identified ingroup (American) |
| Identified outgroup (Russian) | Yelizaveta |
| (Girl) | Identified | Charlotte |
| Identified ingroup (American) |
| Identified outgroup (Russian) | Yelena |
| (Girl) | Identified | Chloe |
| Identified ingroup (American) |
| Identified outgroup (Russian) | Ludmila |

## Scales used in the experiments

We summarized the scales used to measure the three dependent variables: willingness to contribute, empathic concern, and perceived responsibility.

Table S14  
*The scales used for the dependent variables*

|  |  |  |
| --- | --- | --- |
| Dependent Variables | | Scale |
| Willingness to contribute | | Question: “Imagine that you've just earned $5 U.S. dollars for completing this task. You're given an opportunity to donate any amount of the money to support the child. How much of that would you be willing to donate?”  *Item is chosen from USD $0 to USD $5* |
| Empathic emotions | Distress | Statement: ‘‘After reading the child’s [children’s] story, I felt worried, upset, and sad.’’  *Item is rated on a 7-Likert scale ranging from 1 (not at all) to 7 (very much)* |
| Empathic concern | Statement: ‘‘I felt sympathy and compassion towards the sick child [children].’’  *Item is rated on a 7-Likert scale ranging from 1 (not at all) to 7 (very much)* |
| Perceived responsibility | | Statement: “I have the moral responsibility to help the sick child [children] as much as I can”  *Item is rated on a 7-Likert scale ranging from 1 (not at all) to 7 (very much)* |

# Comparisons and deviations

## Deviation from the original study

### Physical settings

The replication study was conducted in a different location from the original study. While the original experiment was conducted at Hebrew University, the current study recruited participants on an online platform - the Mechanical Amazon Turk, and they completed the online Qualtrics survey.

### Research design

#### Extension: additional levels in identifiability

In the original study, the independent variable of identifiability consisted of two levels: unidentified and identified. The current replication aimed to incorporate the condition of group belonging from Kogut and Ritov (2007)’s study to further examine whether the singularity effect of identified victims extends beyond the boundaries of group belonging. Hence, we decided to add additional two levels of the independent variable identifiability (namely, identified ingroup and identified outgroup). We chose not to add the additional levels of independent variable identifiability under unidentified conditions.

### Extension: additional dependent variable*: Perceived responsibility*

We aimed to further extend the replication study by considering the perceived responsibility as an additional dependent variable of the “identified ingroup single” victim effect.

### Instructions and experimental material

### *Story description*

In the original article, the participants read the story describing a sick child or a group of eight sick children being treated in a medical center whose lives are in danger. A new drug was developed that cures the disease. A total amount of 1,500,000 Shekels (about USD $300,000) is needed to save the lives of the victims. However, the inflation rate from 1980 to 2020 in Israel has to be considered. The inflation rate in Israel between 2005 and 2020 was 24.35%, meaning that 1,500,000 shekels in 2005 are equivalent to 1,865,201.6 shekels in 2020, a difference of 365,201.6 shekels over 15 years (Inflation tool, 2020).

The participants in the current replication were American, and thus the currency was converted from shekels to U.S. dollars. 1,865,201.6 shekels equals USD $516,725 (XE, 2020). Hence, in the current replication, we described that USD $500,000 is needed for the development of the drug.

### *Names of the children*

In the original study, names are provided in the identified condition. Sharon, Avi, Ronit, Shiran, Yonatan, Rachel, Oma, and Yotam are used as the names of the eight children. We had American participants in the current replication, and thus we picked eight common American names in 2015 for the children in the identified and identified ingroup condition (Pappas, 2018), namely, Ethan, James, Michael, and Jake for male and Emma, Emily, Charlotte, Chloe for female. Moreover, the children in the identified outgroup condition were described as Russian. Hence, we also chose eight common Russian names: Vladimir, Dmitry, Sergey, and Mikhail for boys and Anastasia, Yelizaveta, Yelena, and Ludmila for girls (Nikitina, 2019).

### *Photo stimuli*

In the original study, a group portrait of eight children was used for identification. We asked the original authors through email whether we could have access to the original stimuli, and received an edited version of the picture in which the children's faces are slightly distorted. After examination, we thought that the distorted image would not affect our ability to replicate the original effect, and thus we chose to use it in our replication for the identification of the children. In our Qualtrics survey, we notified the participants the reason for using distorted and blurred images was to protect the identity of the child/children.

### *Measure*

In the original study, participants were asked whether they were willing to contribute money to save the victim(s) lives and, if so, how much money they would donate at that moment. They could choose any amount, and no scale was provided. To avoid outliers, the willingness to contribute measure in the current replication was framed with an imaginary donation, and it was a continuous measure with an upper boundary. The participants were told to imagine that they had earned $5 U.S. dollars for completing the task and asked how much they would be willing to contribute from these 5 dollars to save the victim(s) lives.

### *Sample size*

In the original study, 120 participants were asked about their willingness to contribute to the costly life-saving treatment of sick child/children, as well as to rate their feelings of empathic concern and distress towards the victims. According stated in our power analysis, we decided to run a sample size of around 2000 to maximize the power of the study.

### *Sample*

In the original study, the author had students at Hebrew University as participants. In the current replication, we recruited participants through an online platform - Amazon Mechanical Turk. MTurk participants are found to be a slightly more representative sample of the U.S. population than are standard Internet samples, as well as a significantly more diverse sample than typical U.S. university samples (Levay et al., 2016; Mortensen & Hughes, 2018). We summarized the comparison and deviation between the original and replication study in Table S15.

Table S15  
*Summary of the deviations in our replication study*

| Item | Original | Replication |
| --- | --- | --- |
| Physical setting | Undergraduate students at Hebrew University | Online |
| Independent Variable | Two levels: unidentified and identified | Four levels: unidentified, identified, *identified in-group* [extension], *identified out-grou*p [extension] |
| Dependent Variable | Two: Willingness to Contribute and empathic Emotions | Three: Willingness to Contribute, empathic emotions, and *perceived responsibility* [extension] |
| Name of the children | Sharon, Avi, Ronit, Shiran, Yonatan, Rachel, Oma, and Yotam are used as the names of the eight children | Common names of Americans (i.e., Ethan, James, Michael, Jake, Emma, Emily, Charlotte, and Chloe) are used for the children in the identified and identified ingroup condition.  Common names of Russian (i.e., Vladimir, Dmitry, Sergey, Mikhail, Anastasia, Yelizaveta, Yelena, Ludmila) are used for the children in identified outgroup conditions |
| Story description | The story describes 1,500,000 Shekels (about USD $300,000) is needed to save the lives of the victims | The story describes USD $500,000 is needed to save the lives of the victims |
| Photo stimuli | Picture set with eight white children | Original picture set with white children with distortion |
| Measure | The participants were asked how much they were willing to donate (with no upper limit) | The participants were told to imagine that they had earned $5 U.S. dollars for completing the task and asked how much they would be willing to contribute from these 5 dollars to save the victim(s) lives |
| Sample | Students at the Hebrew University | MTurk workers (American participants) |
| Sample size | 120 | 2003 |

### *Classification of the replication analysis*

We classify the replication analysis as a “close replication” as per the LeBel et al. (2019) criteria with details summarized in Table S18.

Table S16  
*Classification of the replication based on LeBel et al. (2018)*

| Design facet | Replication | Explanation |
| --- | --- | --- |
| IV operationalization | Same | - |
| DV operationalization | Same | - |
| IV stimuli | Same + extension | Extension: additional level of group belonging in independent variable identifiability  Two additional levels of identified ingroup and identified outgroup were added in the independent variable of identifiability |
| DV stimuli | Similar + extension | The measure of WTC:  Instead of asking the participants to donate any amount of money they wanted, they were told to imagine that they had earned $5 U.S. dollars for completing the task and asked how much they would be willing to contribute to saving the victim(s) lives from these five dollars  Extension: Measure of perceived responsibility  Additional question for asking about participants' moral responsibility to help the sick child/children. |
| Procedural details | Similar | Instructions:  Instead of 1,500,000 Shekels (about USD $300,000), the participants were informed that USD $500,000 was needed to save the lives of the victims in the story description  The replication replaced the Israeli name used in the original study with common American/Russian names  Original photo stimulus with distortion was used for identification of the victim(s) |
| Physical settings | Different | Administering survey on an online platform  From Hebrew University to online Qualtrics survey on the platform of Amazon Mechanical Turk |
| Contextual variables | Different | MTurk Workers as the participant pool  From students at Hebrew University to MTurk workers of a wide range of ages and background |
| Replication classification | Close replication | For "IV operationalization", "DV operationalization", "IV stimuli" and "DV stimuli", they are the *same/similar.* For "Procedural details," "Physical settings," and "Contextual variables" are *different* |

# Power analysis of Study 2 of Kogut and Ritov (2005a)

We conducted a power analysis to calculate the sample size that could achieve the significance of 95% of statistical power. The required sample size was calculated from the Cohen’s f effect size using G\*Power 3.1.9.4 (Faul et al., 2007). We conducted power analysis on the main effects of singularity and identifiability on willingness to contribute, respectively, as well as the interaction effect of singularity and identifiability on willingness to contribute, so as to facilitate comparison between the effects. Yet, as we focused only on the main hypothesis (i.e., the interaction effect of singularity and identifiability on willingness to contribute) in the current replication, the least required sample size would be 202. Since the current replication added an additional dependent variable (perceived responsibility) and two additional levels in independent variable identifiability (identified ingroup and identified outgroup), the planned sample size was multiplied by 2.5 times (200 x 2.5 = 505). Hence, the initially planned sample size of the current replication to replicate the original effect is 500. However, we decided to conduct the study with a sample size of around 2000 to maximize the power of the study. We presented the sample size calculation for the interaction effect of singularity and identifiability using G\*Power in Figure S6.

Figure S6  
*Power analysis for the interaction effect of singularity and identifiability on willingness to contribute based on f-statistic and degree of freedom reported in the original article*

A screenshot of a computer

Description automatically generated

## Pre-exclusions versus post-exclusions

Data from 168 participants were excluded according to the six general exclusion criteria; this left a total sample of 1835. We summarized the exclusion criteria and the details of the participants left after each exclusion in Table S17.

Table S17  
*A detailed summary of case exclusion*

| Exclusion Criteria | Cases meeting exclusion criteria | Cases after exclusion |
| --- | --- | --- |
| **Exclusion Criteria 1** |  |  |
| Participants indicated a low understanding of English used in the study  *Exclusion: if self-report < Fair* | 11 | 1992 |
| **Exclusion Criteria 2** |  |  |
| Participants who self-report not being serious about filling in the survey  *Exclusion: if self-report <4 on 1-5 scale* | 40 | 1952 |
| **Exclusion Criteria 3** |  |  |
| Participants who correctly guessed the hypothesis of this study in the funneling section  *Exclusion: if guessed correctly, a single identified victim is expected to elicit a higher contribution than other victims, and there is a positive relationship between the level of rated distress and willingness to contribute* | 48 | 1904 |
| **Exclusion Criteria 4** |  |  |
| Participants who have already seen or done the survey before  *Exclusion: answered ‘yes.’* | 40 | 1864 |
| **Exclusion Criteria 5** |  |  |
| Participants who failed to complete the survey  *Exclusion: if duration = 0, leave question blank* | 0 | 1864 |
| **Exclusion Criteria 6** |  |  |
| Participants were not from the United States  *Exclusion: if ‘United States’ is not answered for both country of birth and currently residing country* | 29 | 1835 |

## Pre-registration plan versus final report

Table S18  
*Pre-Registration Plan vs. Final Manuscript*

| **Components** | **Location** | **Deviation type** | **Details of deviation** | **Rationale for deviation** | **Impact** | **Time/State** |
| --- | --- | --- | --- | --- | --- | --- |
| Sample size | p.33 in pre-registration manuscript / pp.24-25 in pre-registration supplementary material | minor | Before data collection, the current study planned data collection of 788 samples. 2003 were recruited in the end | We followed Simonsohn (2015) as a rule of thumb for increasing sample size | N/A | 26 April 2020, after peer/open review of pre-registered report |
| Qualtrics survey - introduction | p.36 & 39 *(Instruction)* in pre-registration supplementary material | minor | In the original introduction, the participants were informed that they would be asked for a donation and about their emotions. Such information was removed, and they were informed that they would make a decision regarding a hypothetical choice | One of the authors of the target article mentioned when people believe that they are about to be asked for a donation, they tend to detach themselves from the situation and are less engaged with it | It might decrease participants’ willingness to contribute, leading to smaller score of willingness to contribute and rating of empathic emotions | 26 April 2020, after peer/open review of pre-registered report |
| Qualtrics survey - Funneling section | p.37 & 44 *(Funneling section)* and p.46 *(Generalized exclusion criteria)* in pre-registration supplementary material | minor | In funneling, a question was added on participants' satisfaction with this MTurk HIT's payout offer.  To track participant time on the page, a hidden question was inserted.  Questions were reordered and reworded | To see if we should adjust the amount of payment based of their satisfaction level, and check their duration time on the survey | N/A | 26 April 2020, after peer/open review of pre-registered report |
| Qualtrics survey - Demographic section | p.38 & pp.44-45 *(Demographic section)* and p.46 *(Generalized exclusion criteria)* in pre-registration supplementary material | minor | The initial question concerning participants' English competence was relocated to the demographic section and changed to asking about the current study-specific English comprehension. This question changed from [1 being not adept at all to 7 being very proficient] to [Very bad, Bad, Poor, Neither Good nor Bad, Fair, Good, Very Good].  Demographic questions about participants' present country and family social class were added | To have a better understanding of participants’ demographic information and the response quality based on their understanding of English used in the study | N/A | 26 April 2020, after peer/open review of pre-registered report |
| Main reporting | Main manuscript | Minor | Full sample results reported in the supplementary, findings based on exclusions reported in the main manuscript. | We initially pre-registered to focus our reporting on the full sample and exclusions in the supplementary, yet given the failed replication switched to address the concerns raised regarding the attentiveness and seriousness of the target sample. | None | Manuscript submission 2022 |

*Note.* Categories for deviations: Minor - Change probably did not affect results or interpretations  
Major - Change likely affected results or interpretations

# Extended details of the main replication analysis

Table S19  
*Differences and similarities between original study and replication*

| Items | Kogut and Ritov (2005a) | Present replication |
| --- | --- | --- |
| Sample size | 120 | 1835 | |
| Geographic origin | Israeli | U.S. American | |
| Gender | Unreported | 972 males, 851 females, and 12 others/would rather not disclose | |
| Median age (years) | Unreported | 37.0 | |
| Average age (years) | Unreported | 40.5 | |
| Age range (years) | Unreported | 18-86 | |
| Medium (location) | Hebrew University | Computer (online) | |
| Compensation | Unreported | Nominal payment | |
| Year | 2005 | 2020 | |

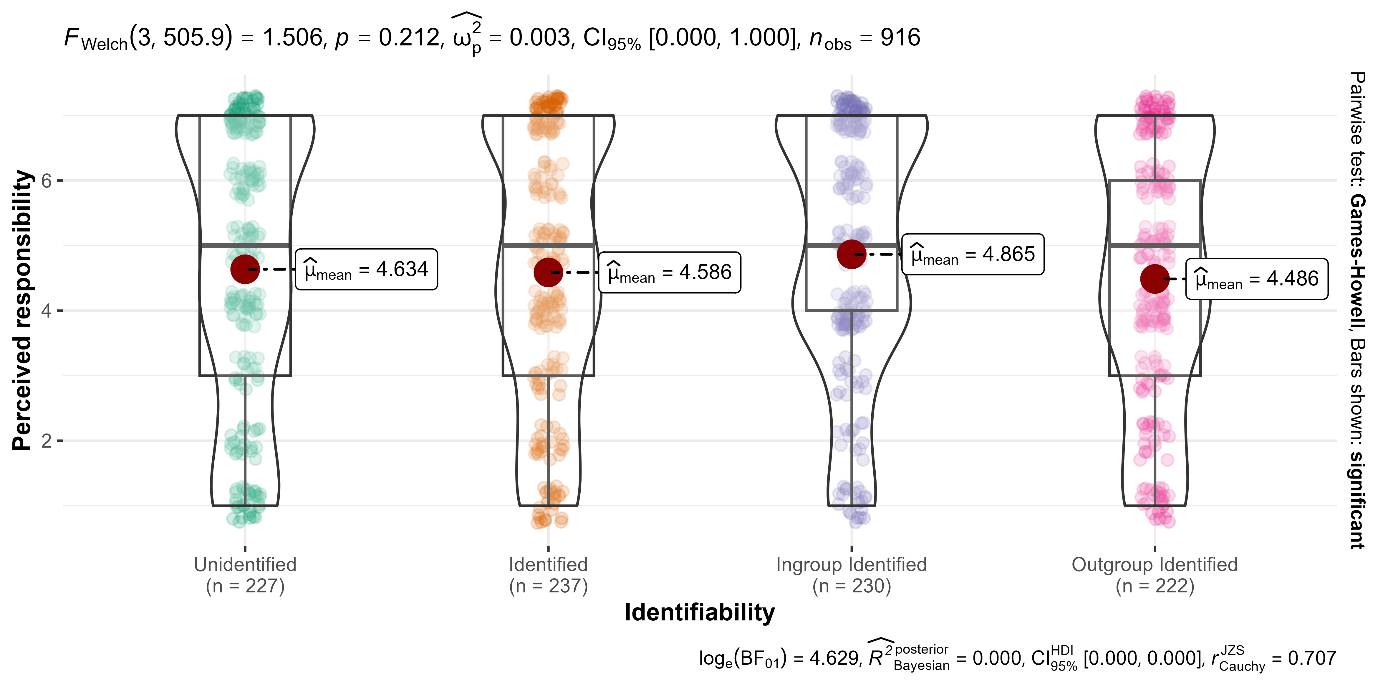
### *Perceived responsibility (Extension).*

We conducted a 2 (single victim vs. a group of eight victims) x 4 (unidentified vs. identified vs. identified ingroup vs. identified outgroup) between-subjects ANOVA on the dependent variable perceived responsibility. We found no support for an effect of singularity on perceived responsibility, *F*(1,1827) = 0.31, *p* = .579, η2p = .000, 90% CI [0, 0.003]. However, we found support for an effect of identifiability on perceived responsibility, *F*(3,1827) = 4.12, *p* = .006, η2p = .007, 90% CI [0.001, 0.013]. We did not find support for an effect of the interaction between singularity and identifiability on WTC, *F*(3,1827) = 1.03, *p* = .378, η2p = .002, 90% CI [0, 0.005].

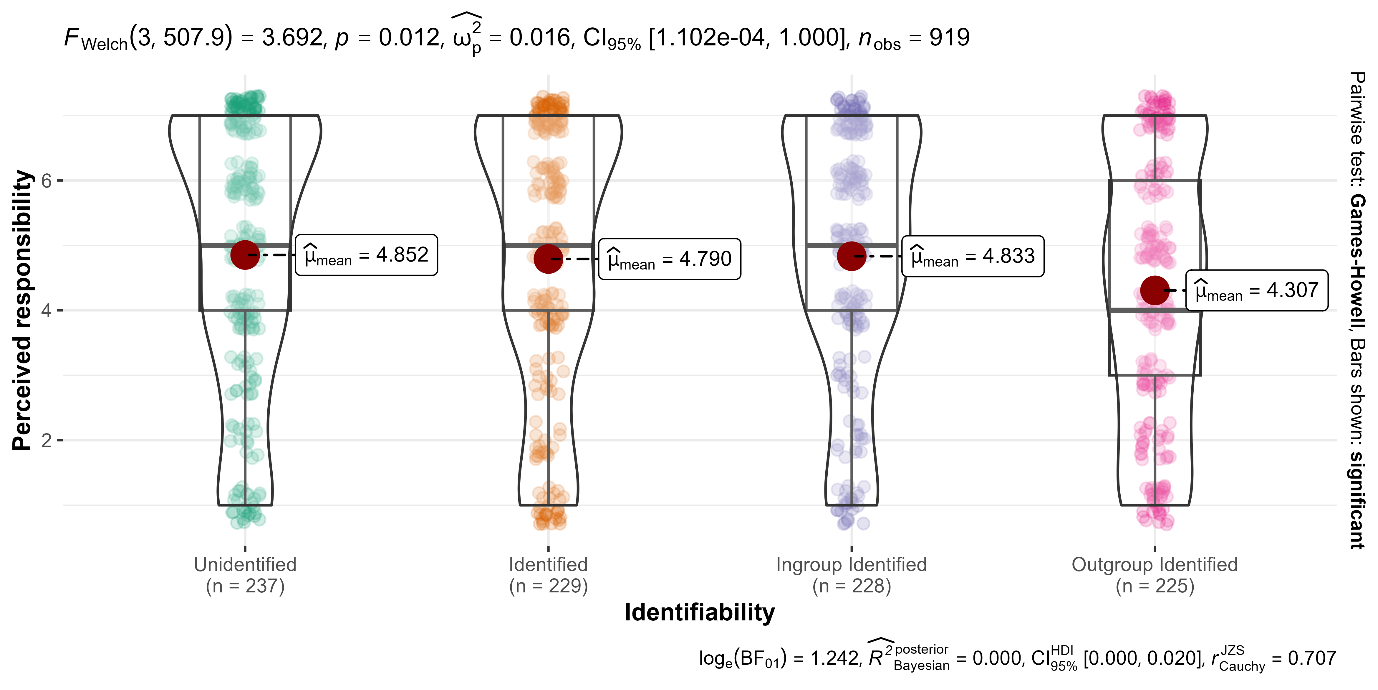
We then conducted Tukey-corrected posthoc pairwise comparisons to test whether there were any differences between subgroups depending on their identifiability. Participants reported lower perceived responsibility in in the identified outgroup condition compared to the identified ingroup condition (*ptukey* = .004, *d* = 0.22), and the unidentified condition (*ptukey* = .049, *d* = 0.17); and similar ratings of perceived responsibility as compared to identified condition. All of the other pairwise comparisons showed very small effect sizes (all Cohen's *d*s < 0.05) and very high *p*-values (all > .90). The above analysis shows that, compared to an identified American victim, the perceived responsibility rating is lower when the identified victims are of Russian nationality. We plotted the results in Figure S7.

Figure S7  
*Perceived responsibility: Interaction between singularity and identifiability.*

Single:



Group:



*Note.* The box plots represent the interquartile range and the median value. The red circles represent average values. Data density is represented by the violin plot, and actual data points are represented as jittered. *p* = Holm’s p-value.

Correlation between willingness to contribute, empathic emotion and perceived responsibility

We next conducted Pearson correlations between perceived responsibility, empathic concern, and willingness to contribute (WTC), respectively. First, we found support for the relationship between distress and WTC. The correlation of distress rating and WTC was significant, *r* = .54, *p* < .001, 95% CI [0.51, 0.57].Similarly, the ratings of empathic concern were significantly correlated with WTC, *r* = .54, *p* < .001, 95% CI [0.50, 0.57]. Moreover,there was a positive correlation between distress and empathic concern, *r* = .72, *p* < .001, 95% CI [0.69, 0.74]. Furthermore, the correlation of perceived responsibility rating and WTC was significant, *r* = .69, p < .001, 95% CI [0.65, 0.70]. Kogut and Ritov (2005a) found that the ratings of distress were correlated with willingness to contribute (*r* = .30*, p* < .01, 95% CI [0.11, 0.45]), but they did not find a correlation between empathic concern ratings and willingness to contribute. Table S20 summarizes the result of the Pearson correlation between WTC, rating of distress, empathic concern, and perceived responsibility.

Table S20  
*Summary of Pearson correlation between willingness to contribute, rating of distress and empathic concern*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | *N* | *r* | 95% CI Lower | 95% CI Higher |
| WTC and distress | 1835 | 0.54\*\*\* | 0.51 | 0.57 |
| WTC and empathic concern | 1835 | 0.54\*\*\* | 0.50 | 0.57 |
| Distress and empathic concern | 1835 | 0.72\*\*\* | 0.69 | 0.74 |
| WTC and perceived responsibility | 1835 | 0.69\*\*\* | 0.65 | 0.70 |

# Additional analyses and results (after exclusion of data as per the above criteria)

In this section, we conducted several ANOVAs apart from our main analysis of 2 (single victim vs. a group of eight victims) x 4 (unidentified vs. identified vs. identified ingroup vs. identified outgroup) ANOVA to ensure the robustness of our findings. We conducted 2 (single vs group of victims) X 2 (identified vs unidentified victims) ANOVA with willingness to contribute, empathic concern and perceived responsibility as dependent variables; 2 (single victim vs. a group of eight victims) x 4 (unidentified vs. identified vs. identified ingroup vs. identified outgroup) ANCOVA with willingness to contribute as dependent variable controlling for empathic concern and perceived responsibility. We have summarized our replication findings comparing 2X2 and 2X4 ANOVAs in detail in Table S20. The analysis was done maintaining our data exclusion criteria mentioned in Table S17.

Table S21  
*Comparison of the findings of the 2X2 and 2X4 replications*

| Target effect | The interaction effect of singularity and identifiability | Singularity effect | Identifiability effect | Singularity comparison | | Identifiability comparison | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Willingness to contribute** |  |  |  | Single  M(SD) | Group  M(SD) | Ingroup  M(SD) | Outgroup  M(SD) |
| 2X2 ANOVA  (η2p/d) | F (1,926) = 0.19  η2p = .00, ⸸ | F (1,926) = 0.44  η2p = .00, ⸸ | F (1,926) = 0.10  η2p = .003, ⸸ | 2.80  (1.99) | 2.71  (2.05) | N.A | |
| d = 0.04, ⸸ | |
| 2X4 ANOVA  (η2p/d) | F (3,1827) = 0.56  η2p = .001, ⸸ | F(1,1827) = 3.35  η2p = .002, ⸸ | F(3,1827) = 4.80  η2p = .008  *p* = .002 | 2.78  (1.98) | 2.61  (2.01) | 2.87  (1.98) | 2.40  (1.93) |
| d = 0.09  *p* = .067 | | d = 0.24  *p* = .002 | |
| **Distress** | | | |  | |  | |
| 2X2 ANOVA  (η2p/d) | F (1,926) = 0.03  η2p = .00, ⸸ | F (1,926) = 0.36  η2p = .00, ⸸ | F (1,926) = 0.03  η2p = .00, ⸸ | 5.03  (1.75) | 4.96  (1.86) | N.A | |
| d = 0.04, ⸸ | |
| 2X4 ANOVA  (η2p/d) | F(3,1827) = 0.05  η2p = .000, ⸸ | F(1,1827) = 1.09  η2p = .001, ⸸ | F(3,1827) = 4.35  η2p = .007  *p* = .005 | 4.95  (1.79) | 4.86  (1.85) | 4.97  (1.79) | 4.63  (1.87) |
| d = 0.05, ⸸ | | d = 0.19  *p =* .027 | |
| **Empathic concern** | | | |  | |  | |
| 2X2 ANOVA  (η2p/d) | F (1,926) = 0.84  η2p = .00, ⸸ | F (1,926) = 0.11  η2p = .00, ⸸ | F (1,926) = 0.14  η2p = .00, ⸸ | 5.80  (1.51) | 5.76  (1.64) | N.A | |
| d = 0.02, ⸸ | |
| 2X4 ANOVA  (η2p/d) | F(3, 1827) = 0.57  η2p = .001, ⸸ | F(1, 1827) = 0.91  η2p = .000, ⸸ | F(3, 1827) = 4.91  η2p = .008  *p* = .002 | 5.75  (1.55) | 5.68  (1.62) | 5.82  (1.52) | 5.47  (1.65) |
| d = 0.05, ⸸ | | d = 0.22  *p =* .004 | |

*Note.* 2X2 ANOVA was performed with only two levels of identifiability (identified vs unidentified victims). Since the mean of identified and unidentified victims are the same for both the 2X2 and 2X4 ANOVAs, we have not included that in the table. We found no significant difference between the mean of identified and unidentified victims. ⸸ = statistically not significant; M = Mean; SD = Standard Deviation; N.A = not available since the 2X2 ANOVA was performed with two levels of identifiability.

## ANCOVA test in the replication analysis

### Controlling distress

We examined whether empathic emotions for the victim(s) influenced the interaction effect of singularity and identifiability on willingness to contribute. We conducted a 2 (single victim vs. a group of eight victims) x 4 (unidentified vs. identified vs. identified ingroup vs. identified outgroup) ANCOVA on willingness to contribute with a rating of distress as a covariate. We found no statistically significant effect of singularity on willingness to contribute, *F*(1,1826) = 2.26, *p* = .133, η2p = 0.001. We found no statistically significant effect of identifiability on willingness to contribute, *F*(3,1826) = 2.04, *p* = .106, η2p = 0.003. However, we found a statistically significant effect of distress on willingness to contribute, *F*(1,1826) = 738.32, *p* < .001, η2p = 0.287. We also did not find an interaction effect of singularity and identifiability on willingness to contribute, *F*(3,1826) = 0.633, *p* = .594, η2p = 0.001. In comparison, the original authors were able to find a marginally significant interaction between the factors of identification and singularity, *p* = .077, after controlling the factor of distress.

### Controlling empathic concern

We conducted a 2 (single victim vs. a group of eight victims) x 4 (unidentified vs. identified vs. identified ingroup vs. identified outgroup) ANCOVA on willingness to contribute with a rating of empathic concern as a covariate. We found no statistically significant effect of singularity on willingness to contribute, *F*(1,1826) = 2.44, *p* = .119, η2p = 0.001. We found no statistically significant effect of identifiability on willingness to contribute, *F*(3,1826) = 1.51, *p* = .209, η2p = 0.003. However, we found a statistically significant effect of empathic concern on willingness to contribute, *F*(1,1826) = 716.68, *p* < .001, η2p = 0.282. We also did not find an interaction effect of singularity and identifiability on willingness to contribute, *F*(3,1826) = 0.26, *p* = .853, η2p = 0.000.

### Controlling perceived responsibility

We conducted a 2 (single victim vs. a group of eight victims) x 4 (unidentified vs. identified vs. identified ingroup vs. identified outgroup) ANCOVA on willingness to contribute with a rating of perceived responsibility as a covariate. We found a statistically significant effect of singularity on willingness to contribute, *F*(1,1826) = 8.98, *p* = .003, η2p = 0.005. We found no statistically significant effect of identifiability on willingness to contribute, *F*(3,1826) = 1.24, *p* = .293, η2p = 0.002. However, we found a statistically significant effect of perceived responsibility on willingness to contribute, *F*(1,1826) = 1545.70, *p* < .001, η2p = 0.458. We also did not find an interaction effect of singularity and identifiability on willingness to contribute, *F*(3,1826) = 0.31, *p* = .815, η2p = 0.000.

From the Tuckey’s corrected posthoc analysis we, we found a statistically significant difference in participant’s willingness to contribute for a single victim (*M* = 2.80, SD = 2.07) compared to a group of victims (*M* = 2.59, SD = 2.05), *t*(1826) = 3.00, *ptukey* = .003, *d* = 0.14, 95% CI [0.05, 0.23].

### Controlling for both distress and perceived responsibility

We conducted a 2 (single victim vs. a group of eight victims) x 4 (unidentified vs. identified vs. identified ingroup vs. identified outgroup) ANCOVA on willingness to contribute with a rating of perceived responsibility and distress as covariates. We found a statistically significant effect of singularity on willingness to contribute, *F*(1,1825) = 7.77, *p* = 0.005, η2p = 0.004. We found no statistically significant effect of identifiability on willingness to contribute, *F*(3,1825) = 1.08, *p* = .359, η2p = 0.002. However, we found a statistically significant effect of perceived responsibility on willingness to contribute, *F*(1,1825) = 603.18, *p* < .001, η2p = 0.245; and a statistically significant effect of distress on willingness to contribute, *F*(1,1825) = 21.73, *p* < .001, η2p = 0.012. We also did not find an interaction effect of singularity and identifiability on willingness to contribute, *F*(3,1825) = 0.31, *p* = .820, η2= 0.000. From the Tuckey’s corrected posthoc analysis we, we found a statistically significant difference in participant’s willingness to contribute for single victim (*M* = 2.78, SD = 1.98) compared to a group of victims (*M* = 2.61, SD = 2.01), *t*(1825) = 2.79, *ptukey* = .005, *d* = - 0.11, 95% CI [0.04, 0.22]. We summarized the findings of the current replication analysis and compared it with the findings of Kogut and Ritov (2005a) in Table S22.

Table S22  
*Comparison of the findings of target article and replication study for ANCOVA*

| Target effect | The interaction effect of singularity and identifiability | | Singularity effect | | Identifiability effect | | Control variable effect |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Controlling for distress** | | |  | |  | |  |
| 2X2 ANCOVA  (η2p/d) | F (1,107) = 0.92  η2p = .01, ⸸ | | F (1,107) = 0.64  η2p = .00, ⸸ | | F (1,107) = 0.55  η2p = .00, ⸸ | | F (1,107) = 7.81  η2p = .07, *p* = .006 |
|
| 2X4 ANCOVA  (η2p/d) | F (3,1826) = 0.63  η2p = .00, ⸸ | | F(1,1826) = 2.26  η2p = .00, ⸸ | | F(3,1826) = 2.04  η2p = .00, ⸸ | | F(1,1826) = 738.32  η2p = .29, *p* < .001 |
|
| **Controlling for empathic concern** | | | | | | |  |
| 2X2 ANCOVA  (η2p/d) | F (1,107) = 2.57  η2p = .02, ⸸ | | F (1,107) = 0.45  η2p = .00, ⸸ | | F (1,107) = 0  η2p = .00, ⸸ | | F (1,107) = 0.38  η2p = .00, ⸸ |
|
| 2X4 ANCOVA  (η2p/d) | F(3,1826) = 0.26  η2p = .00, ⸸ | | F(1,1826) = 2.44  η2p = .00, ⸸ | | F(3,1826) = 1.51  η2p = .00, ⸸ | | F(1,1826) = 716.68  η2p = .28, *p* < .001 |
|
| **Controlling for perceived responsibility** | | | | | | |  |
| 2X4 ANCOVA  (η2p/d) | F(3,1826) = 0.31  η2p = .00, ⸸ | | F(1,1826) = 8.98  η2p = .00, *p* = .003 | | F(3,1826) = 1.24  η2p = .00, ⸸ | | F(1,1826) = 1545.70  η2p = .46, *p* < .001 |
|
| **Controlling for distress and perceived responsibility**  **(Effects presented in this order)** | | | | | | | |
| 2X4 ANCOVA  (η2p/d) | | F(3,1825) = 0.31  η2p = .00, ⸸ | | F(1,1825) = 7.77  η2p = .00, *p* = .005 | | F(3,1825) = 1.07  η2p = .00, ⸸ | F(1,1825) = 21.73  η2p = .01, *p* < .001 |
| F(1,1825) = 603.18  η2p = .25, *p* < .001 |

*Note*. 2X2 ANCOVA gives the effect size from study 2 from Kogut and Ritov (2005a). 2X4 ANCOVA is the effect sizes from the current replication. ⸸ = statistically not significant.

Replication analysis before exclusion with four levels of identifiability

We conducted the 2 (single victim vs. a group of eight victims) x 4 (unidentified vs. identified vs. identified ingroup vs. identified outgroup) ANOVAs without implementing the exclusion criteria to check if the results we obtained are different or not. The study was administered on the Amazon MTurk Platform, a crowdsourcing marketplace where anyone can post tasks to the on-demand workforce, such as survey participation and content moderation, etc. In our study, a total of 2003 United States of America’s Amazon Mechanical Turk (MTurk) participants completed the study, *Mage* = 40.4 years, *SD* = 12.9 years; 1057 male, 933 females, 13 other/would rather not disclose. We have compared the findings of the two 2X4 ANOVAs with and without the exclusion criteria implemented, in Table S23. Alongside, we presented the correlation between willingness to contribute, distress, and empathic concern in Table S24.

Table S23  
*Comparison of the findings of the 2X4 ANOVAs*

| Target effect | The interaction effect of singularity and identifiability | Singularity effect | Identifiability effect | Singularity comparison | | Identifiability comparison | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Willingness to contribute** |  |  |  | Single  M(SD) | Group  M(SD) | Identified  M(SD) | Unidentified  M(SD) | | Ingroup  M(SD) | Outgroup  M(SD) | |
| With exclusion criteria  (η2p/d) | F (3,1827) = 0.56  η2p = .001, ⸸ | F(1,1827) = 3.35  η2p = .002, ⸸ | F(3,1827) = 4.80  η2p = .008  *p* = .002 | 2.78  (1.98) | 2.61  (2.01) | 2.73  (1.99) | | 2.77  (2.05) | 2.87  (1.98) | 2.40  (1.93) | |
| *d* = 0.09, ⸸ | | *d* = - 0.02, ⸸ | | | *d* = 0.24, *p* = .002 | | |
| Without exclusion criteria  (η2p/d) | F (3,1995) = 0.77  η2p = .001, ⸸ | F(1,1995) = 3.10  η2p = .002, ⸸ | F(3,1995) = 5.90  η2p = .008  *p* = .002 | 2.78  (1.96) | 2.62  (1.99) | 2.76  (1.96) | 2.76  (2.02) | | 2.87  (1.97) | | 2.41  (1.93) |
| *d* = 0.08, ⸸ | | *d* = 0.00, ⸸ | | | *d* = 0.23, *p* = .001 | | |
| **Distress** | | | | Single  M(SD) | Group  M(SD) | Identified  M(SD) | | Unidentified  M(SD) | Ingroup  M(SD) | | Outgroup  M(SD) |
| With exclusion criteria  (η2p/d) | F(3,1827) = 0.05  η2p = .000, ⸸ | F(1,1827) = 1.09  η2p = .001, ⸸ | F(3,1827) = 4.35  η2p = .007  *p* = .005 | 4.95  (1.79) | 4.86  (1.85) | 4.99  (1.82) | | 5.01  (1.79) | 4.97  (1.79) | | 4.63  (1.87) |
| *d* = 0.05, ⸸ | | *d* = - 0.01, ⸸ | | | *d* = 0.19, *p =* .027 | | |
| Without exclusion criteria  (η2p/d) | F(3,1995) = 0.07  η2p = .000, ⸸ | F(1,1995) = 1.37  η2p = .001, ⸸ | F(3,1995) = 4.83  η2p = .007  *p* = .002 | 4.94  (1.78) | 4.84  (1.85) | 5.00  (1.81) | 5.00  (1.78) | | 4.93  (1.79) | | 4.63  (1.86) |
| *d* = 0.05, ⸸ | | *d* = 0.00, ⸸ | | | *d* = 0.17, *p =* .044 | | |
| **Empathic concern** | | | | Single  M(SD) | Group  M(SD) | Identified  M(SD) | | Unidentified  M(SD) | Ingroup  M(SD) | | Outgroup  M(SD) |
| Without exclusion criteria  (η2p/d) | F(3, 1827) = 0.57  η2p = .001, ⸸ | F(1, 1827) = 0.91  η2p = .000, ⸸ | F(3, 1827) = 4.91  η2p = .008  *p* = .002 | 5.75  (1.55) | 5.68  (1.62) | 5.76  (1.57) | | 5.80  (1.58) | 5.82  (1.52) | | 5.47  (1.65) |
| *d* = 0.04, ⸸ | | *d* = - 0.02, ⸸ | | | *d* = 0.22, *p =* .004 | | |
| Without exclusion criteria  (η2p/d) | F(3,1995) = 0.58  η2p = .001, ⸸ | F(1,1995) = 0.76  η2p = .000, ⸸ | F(3,1995) = 6.13  η2p = .009  *p* < .001 | 5.71  (1.55) | 5.65  (1.63) | 5.77  (1.55) | 5.77  (1.57) | | 5.77  (1.54) | | 5.42  (1.67) |
| *d* = 0.04, ⸸ | | *d* = 0.00, ⸸ | | | *d* = 0.22, *p =* .003 | | |

*Note.* With exclusion criteria means the 2X4 ANOVA was conducted after implementing the exclusion criteria and without exclusion criteria means the 2X4 ANOVA was conducted without the exclusion criteria. . ⸸ = statistically not significant; M = Mean; SD = Standard Deviation; We used 95% confidence intervals for Cohen's d but 90% confidence intervals for η2p because η2p cannot assume negative values. p-values represented in the table indicates the Tukey-corrected p-values for both the target article and the replication.

Table S24 *Summary of Pearson Correlation Between Willingness to Contribute, Perceived Responsibility, Rating of Distress, and Empathic Concern*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  | 95% Confidence Interval | |
| Correlation | | *N* | r | *LCI* | *UCI* |
| WTC and distress | | 2003 | 0.53\*\*\* | 0.50 | 0.56 |
| WTC and empathic concern | | 2003 | 0.53\*\*\* | 0.50 | 0.57 |
| Distress and empathic concern | | 2003 | 0.72\*\*\* | 0.69 | 0.74 |

*Note*: *r* = Pearson’s *r*, \*\*\*p <.001 *LL*=Confidence Interval Lower Limit, *UL*=Confidence Interval Upper Limit

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