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The Fox and the Lion: Investigating Associations between Empathy and Emotion Perspective-Taking in Aesop's Fables

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Abstract

Empathy is essential in story comprehension as it requires understanding of the emotions and intentions of the characters. We evaluated the sensitivity of an emotional perspective-taking task using Aesop's Fables in relation to empathy. Participants ($N = 301$) were presented with 15 short fables and were asked to rate the intensity of the emotions they would feel (anger, sadness, disgust, fear, surprise, joy, trust, and anticipation) by adopting the perspective of one of the characters (offender, victim) or the observer's perspective. A data-driven approach revealed that participants' responses were aligned with the characters' intentions, suggesting successful emotional perspective-taking. Participants sympathized with the victim rather than the offender, demonstrating affective sharing processes. Further, participants with higher empathy scores exhibited stronger negative emotions from the victim's perspective, independently of their level of distress. Our task was not influenced by gender effects. We suggest that the Aesop's Fables task could provide an indirect instrument to study empathy.

Keywords

Aesop's Fables, Empathy, Perspective-Taking, Emotions, Toronto Empathy Questionnaire, Interpersonal Reactivity Index

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1. Introduction

"And they lived happily ever after." As you read the last phrase of a novel, you burst into tears for the misfortunes that befall the protagonists, even if you know that they never existed. This natural ability to understand the emotions of others refers to the experience of empathy (Decety & Jackson, 2004). Empathy is commonly defined as an affective response to the emotional state of another that is congruent with the other's emotional state (Eisenberg, 2003). Story reading is associated with induction of empathic responses, through understanding the thoughts and beliefs of the characters (Bruner, 1986). Fables are a certain kind of story leading to a lesson to be learned. The present study investigated the potential of the Aesop's Fables to tap into the different components of empathy via an emotional perspective-taking task.

Aesop's Fables is a collection of fables credited to Aesop, a storyteller believed to have lived in ancient Greece. Most Aesop's Fables convey the message that strength, incarnated as physical power, is an important feature, as the strong rule and the weak usually obey or suffer. On the other hand, in many fables the "good" character (e.g., kind, intelligent, sympathetic) wins over the "bad" character (e.g., arrogant, greedy, careless) after thoughtful action is taken. One of the most prominent features of Aesop's Fables is that one of the characters, usually the bad one, is tricking the other character; the latter tries to save themselves from harm, sometimes successfully, sometimes unsuccessfully. The fables thus constitute cautionary stories, providing lessons on how to behave in a position of weakness (Clayton, 2008). Comprehension of the fables requires understanding of deception, of the emotions, as well as the intentions of the characters (Pelletier & Beatty, 2015).

This understanding of others' thoughts and emotions, which is called empathy, is an important feature of social communication and interaction mediating the acquisition and development of appropriate social behaviors (Lieberman, 2007). Empathy encompasses many different facets, including 1) affective sharing, i.e. being affectively aroused by others' emotions, 2) empathic concern, being motivated to care for others' welfare, and 3) perspective-taking, consciously putting oneself into the mind of someone else (Decety & Jackson, 2004). Particularly, affective sharing is often viewed as the simplest form of empathy and is observed across non-human and human species (Edgar et al., 2012). Affective sharing entails identifying another person's emotional state, which then elicits an adaptive response from the observer, such as care or help (Decety & Cowell, 2015). On the other hand, empathic concern refers to the elicitation of an emotion by the welfare of a person in need, associated with nurturance (Decety & Cowell, 2015). Finally, perspective-taking is the ability to assume the perspective of another and understand what they are feeling (Myers et al., 2014).

Previous studies have employed story comprehension paradigms to investigate perspective-taking and empathy (e.g., Fletcher et al., 1995; Gallagher et al., 2000; Paunov et al., 2019; Schurz et al., 2021). This is because a story schema allows the reader to identify, organize, and understand information regarding a

character's mental state (Schurz et al., 2021). This process provides useful information for evaluating the character's feelings and intentions. Notably, Aesop's Fables usually involve animals as protagonists rather than humans. It is known that humans feel empathy for animals when the latter appear vulnerable (Batson, 2012). Importantly, an association has been previously suggested between perspective-taking and Aesop's Fables (Papageorgiou et al., 2020; Pelletier & Beatty, 2015). In particular, Aesop's Fables were used to study the relationship between reading comprehension and theory of mind in 4- and 5-year-old children (Pelletier & Beatty, 2015). Further, Papageorgiou and colleagues (2020) created a novel paradigm to study perspective-taking in sighted vs. blind individuals, by presenting participants with the Aesop's Fables and asking them to rate the intensity of certain emotions from the standpoints of the offender, the victim, and the observer. The same task was employed in the present study to investigate the relationship between emotion-induction in Aesop's Fables and empathy.

The current study aimed to investigate whether an emotional perspective-taking task using Aesop's Fables would be sensitive to different aspects of empathy. A sample of British adults was recruited from the general population. The reason for this lies on the fact that British adults have a low level of (if at all any) familiarity with the Aesop's Fables. This is ideal as we wanted to minimize any potential effect of familiarity on participants' performance on the task. This possible familiarity effect could be related to cultural context that is always considered as a possible factor of differentiation in subjects' performance in psychology tasks and questionnaires. After all, as Hofstede (1984) has mentioned, culture is "the collective programming which distinguishes the members of one category of people from those of another" (Hofstede, 1984: p. 389). For the need to take into consideration the factor of cultural context and expand psychological theory and research with data obtained by as many different cultural contexts as possible (see Triandis, 1996). We employed emotion ratings to the Aesop's fables and examined their relationship to standard empathy questionnaires: the Interpersonal Reactivity Index (IRI; Davis, 1980) and the Toronto Empathy Questionnaire (TEQ; Spreng et al., 2009). Specifically, participants were presented with 15 short fables and were asked to rate the intensity of the emotions they would feel adopting the perspective of one of the protagonists or the observer. The given emotions were anger, sadness, disgust, fear, surprise, joy, trust, and anticipation. Each fable was presented three times, once for each perspective (offender, victim, observer). A data-driven analysis procedure identified two main emotion components: negative and positive emotions. Furthermore, based on subjects' ratings, fables were separated into two clusters: fables in which the offender clearly tricked the victim (unambiguous) and fables in which the victim was not hurt by the offender or managed to even trick the offender (ambiguous). Finally, potential associations were examined between the rated intensity of emotions and the level of self-reported empathy in the IRI and TEQ questionnaires. Given that the task involves perspective-taking from the protagonists' view (victim, offender), as well as from the external observer's view, we wanted

to examine whether it is sensitive to perspective-taking aspects of empathy, like the one measured by the IRI Perspective-Taking subscale. Moreover, we were interested in examining further possible but less obvious sensitivities of this task related to other aspects of cognitive empathy, like the one addressed by the IRI Fantasy Scale, but also aspects of affective empathy, like the ones addressed by the IRI Personal Distress and IRI Empathic Concern subscales. Overall, this is the first attempt to experimentally explore the possible links of the Aesop's task with specific empathy aspects, starting with the obvious possible relation between Aesop task and perspective-taking, and expanding further with examination of less obvious relations concerning other aspects of empathy.

Our hypotheses were as follows. First, we hypothesized that subjects' emotion ratings will reflect successful perspective-taking, i.e. they will rate highly the negative (positive) emotions from the victim's (offender's) perspective. Second, subjects will feel sympathy for the victim, rather than the offender, reflected in their ratings from the observer's perspective. Third, we expected that subjects with high empathy will show the maximum empathy from the victim's perspective. We further explored how the interaction between empathy and personal distress would influence emotion-induction during perspective-taking. Finally, we tested whether the Aesop's fables task is gender-dependent, in line with the empathy scales (gender-dependency of IRI: Davis, 1980).

2. Methods

2.1. Participants

Three hundred and one adults aged between 18 and 83 years old (mean ± s.d. age of 27.53 ± 9.73 years) participated in an online study. In order to be able to investigate potential gender effects, we achieved a balanced sample with regards to gender (147 females, 154 males). All participants had British nationality (260 from England, 27 from Scotland, 11 from Wales, 3 from Northern Ireland) with English as first language. Participants were provided with extensive information about the procedure and gave online consent prior to participation. All procedures employed conformed to the Declaration of Helsinki. The study was approved by the Local Ethics Committees of the First Department of Psychiatry, National and Kapodistrian University of Athens Medical School, Eginition Hospital, Athens, Greece, and of the University Mental Health, Neurosciences and Precision Medicine Research Institute "Costas Stefanis" (UMHRI), Athens, Greece. Participants received monetary reimbursement at a rate of £6.50 per hour. The study was performed under the collaboration of UMHRI, the First Department of Psychiatry, and the Applied Philosophy Research Lab of the National and Kapodistrian University of Athens, Greece.

2.2. Measures

2.2.1. Aesop's Fables

We used 15 Fables written by Aesop, based on the selection of Papageorgiou and

colleagues (2020) who also performed the translations from Greek to English. The fables involve two main characters, an "offender" and a "victim", representing a negative and a positive perspective or moral stance, respectively. The self-referential perspective of the "observer" was considered as a third perspective. Therefore, each fable was followed by three statements based on the perspective-taking of the offender, the victim, and the observer. Each perspective statement was accompanied by 8 emotions: anger, sadness, disgust, fear, surprise, joy, trust, and anticipation. The emotion selection was based on Plutchik & Kellerman's (1980) set of 8 basic bipolar emotions. All fables and perspective-taking statements are included in the Supplementary Material.

2.2.2. Empathy Questionnaires

The Toronto Empathy Questionnaire (*TEQ*): The TEQ was developed by Spreng and colleagues (2009) and constitutes a unidimensional instrument for the assessment of empathy. It is a short, homogenous and powerful assessment tool to evaluate empathy as an emotional process. The TEQ consists of 16 items on a five-point Likert scale (Never = 0; Rarely = 1; Sometimes = 2; Often = 3; Always = 4). The following are examples of two TEQ items: *When someone else is feeling excited, I tend to get excited too*; *Other people's misfortunes do not disturb me a great deal*.

The Interpersonal Reactivity Index (*IRI*): The IRI (Davis, 1980) is a short instrument, based on a multidimensional conceptualisation of empathy. The IRI was designed to assess a set of empathic tendencies: 1) Perspective taking (PT; adopting another's psychological perspective), 2) Fantasy (FS; identifying with fictitious characters), 3) Empathic concern (EC; experiencing feelings of warmth, sympathy, and concern toward others), and 4) Personal distress (PD; feeling discomfort and concern when witnessing others' negative experiences). The four dimensions have been suggested to constitute discrete but related aspects of empathy, as evidenced by predicted significant relationships of the IRI scale scores with interpersonal functioning, social competence and other empathy-related measures (Davis, 1983). The IRI consists of 28 items (7 per dimension) on a five-point Likert scale (A = Does not describe me well; E = Describes me very well). Examples of two IRI items are the following: *I often have tender, concerned feelings for people less fortunate than me*; *When I see someone get hurt, I tend to remain calm*.

Both empathy questionnaires are included in full in the Supplementary Material.

2.3. Procedure

We used the Gorilla Experiment Builder (https://www.gorilla.sc/) to create our experiment on an online version (Anwyl-Irvine et al., 2020). Participants were recruited through Prolific (https://www.prolific.co/). The experimental procedure is depicted in **Figure 1(A)**. Specifically, participants were first presented with extensive information on the study and were asked to give consent for their

participation. They were then instructed that they would be presented with 15 short fables of Aesop, and would be asked to rate the intensity of the emotions they would feel adopting the perspective of the observer or one of the protagonists of the respective fable. Each fable was presented three consecutive times, once for each perspective (offender, victim, observer). The three presentations were differentiated only by the perspective statement (e.g., *If I were in the camel's "position", I would feel…*; *If I were in the monkey's "position", I would feel…*; *As I am following the story "right now", I feel…*). Participants rated the intensity of 8 given emotions: anger, sadness, disgust, fear, surprise, joy, trust, and anticipation. They completed their ratings on a scale from 0 (not at all) to 10 (very much) by dragging their mouse pointer on a slider. All the emotions were presented on the same slide, below the fable and the perspective statement (see Figure S1 in the Supplementary Material for an example of the interface). The presentation order of the fables as well as the order of the perspective statements were randomized across participants. Finally, the order of the emotions was randomized every time a fable-perspective statement pair was presented. After completion of the task, participants were asked to respond to the two empathy questionnaires (TEQ, IRI) and complete some demographic information (see Supplementary Material for all material used). All figures in the manuscript were created using Adobe Illustrator (Adobe Inc., 2019).

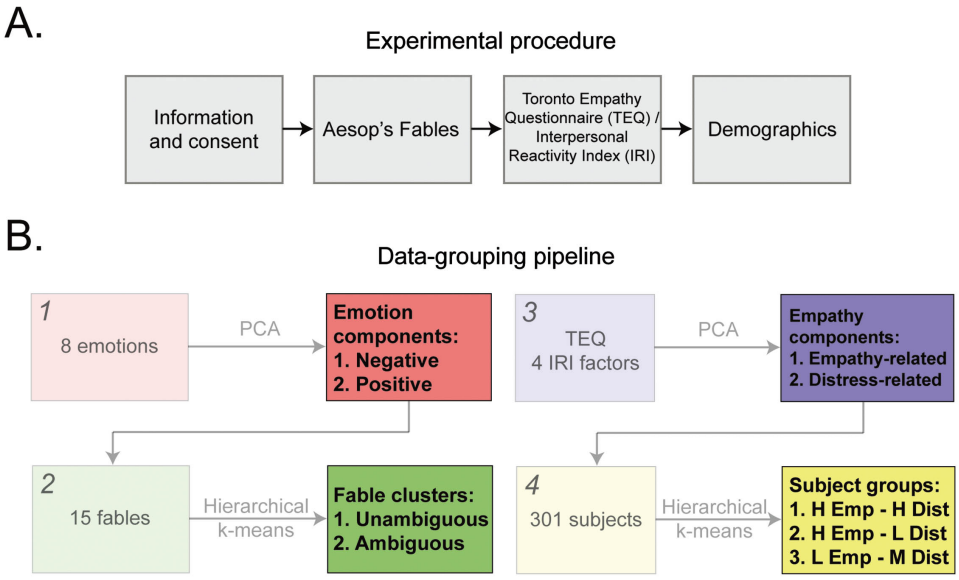

Figure 1. Pipeline of the experimental procedure and data analysis. (A) An illustration of the experimental design; (B) Pipeline of the data analysis procedure for dimensionality reduction. In step 1, Principal Component Analysis (PCA) identified two main emotion components, negative and positive. In step 2, the ratings in both emotion components in each perspective-taking statement were fed to a hierarchical *k*-means algorithm, splitting the fables into two clusters, unambiguous and ambiguous fables. In step 3, PCA identified an empathy-related and a distress-related component based on participants' scores in the TEQ and IRI questionnaires. Finally, in step 4, a hierarchical *k*-means procedure separated three groups of participants: high empathy-high distress, high empathy-low distress, and low empathy-moderate distress groups.

2.4. Statistical Analysis

2.4.1. Data-Grouping Procedure

To reduce the dimensionality and to identify patterns in the data, we first followed a data-reduction procedure (**Figure 1(B)**). First, we performed a Principal Component Analysis (PCA) to identify and group similarly rated emotions. Then, we attempted to split the fables into clusters, based on participants' ratings, following a hierarchical *k*-means algorithm. An additional PCA identified the main components measured by the TEQ and the IRI questionnaires. Finally, a hierarchical *k*-means procedure separated participants into different groups, based on their empathy profile.

Principal Component Analysis (*PCA*)

PCA on the emotion ratings to Aesop's fables: To identify which emotions were judged similarly by the participants and to reduce the dimensionality of the emotions, we conducted a PCA on all the ratings of all participants. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .811 and the Bartlett's Test of Sphericity was significant ($p < .001$), confirming the suitability of the data for PCA. The number of components was identified using a criterion of eigenvalue higher than 1. The PCA was based on the correlation matrix and the maximum iterations for convergence was set to 25. To achieve a simple structure, an orthogonal (varimax) rotation was performed. A "negative" and a "positive" emotion component were revealed from the analysis.

PCA on empathy scores: A PCA was employed to analyze the correlation structure between all empathy scores (TEQ; IRI perspective-taking, PT; IRI fantasy-scale, FS; IRI empathic concern, EC; and IRI personal distress, PD) on the whole sample. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy at .704 and the Bartlett's Test of Sphericity ($p < .001$) confirmed the suitability of the data for PCA. To achieve a simple structure, an orthogonal (varimax) rotation was performed. Analysis revealed an "empathy-related" and a "distress-related" empathy component.

Hierarchical k-means clustering

Hierarchical k-means clustering of Aesop's Fables: In order to identify groups of fables that aroused emotions in a similar manner, a hybrid hierarchical k-means clustering procedure was followed. Because we wanted to detect potential groups of fables in a data-driven method without any bias, we decided to perform the following unsupervised learning procedure. First, to determine the appropriate number of clusters, we performed hierarchical cluster analysis on the average PCA factor scores (positive and negative factor) for each perspective (offender, victim, observer) in each fable. We used Euclidean distances as the distance metric and Ward's linkage clustering method. This process attempted to identify the number of clusters that optimally maximizes the differences between clusters and minimizes the within-cluster differences. The optimal number of clusters as evaluated by the elbow method was two.

Then, we conducted a non-hierarchical *k*-means clustering using the set of cluster centers defined in the hierarchical procedure as the initial cluster centers.

The *k*-means algorithm can potentially improve the initial grouping. The goal of this algorithm is to minimize the Euclidean distance between each data point and the nearest centroid. Once this is done for all *k* number of centroids, the process repeats iteratively to find the best centroid positions. Analysis revealed two clusters of fables. The "unambiguous" cluster included fables (N = 7) in which the offender clearly hurt the victim, while the "ambiguous" cluster included fables (N = 8) in which the offender did not manage to hurt the victim or was even tricked by the victim.

Hierarchical k-means clustering of participants: We used the empathy components extracted from the PCA analysis (see section 2.4.1.1) to split participants into separate groups. To identify clusters of participants with a similar empathy profile, a hybrid hierarchical *k*-means clustering procedure was followed. First, to determine the appropriate number of clusters, we performed hierarchical cluster analysis on the average PCA factor scores (empathy-related and distress-related component) of each subject. We used Euclidean distances as the distance metric and Ward's linkage clustering method. The optimal number of clusters revealed by the elbow method was three.

Then, we conducted non-hierarchical *k*-means clustering using the set of cluster centers defined in the hierarchical procedure as the initial cluster centers. The *k*-means algorithm improved the initial grouping. The goal of this algorithm is to minimize the Euclidean distance between each data point and the nearest centroid. Once this is done for all *k* number of centroids, the process repeats iteratively to find the best centroid positions. Group 1 (N = 114) showed both high empathy-related and distress-related contributions (HE-HD), group 2 (N = 90) showed high empathy-related but low distress-related (HE-LD), while group 3 (N = 97) showed low empathy but moderate distress (LE-MD) contributions.

2.4.2. Relationship between Empathy and Emotion Ratings to Aesop's Fables

To investigate the relationship between empathy scores and emotion ratings to Aesop's Fables, we conducted a mixed ANOVA with *emotion* (positive, negative) and *perspective* (offender, victim, observer) as the within-subjects factors and *empathy group* (HE-HD, HE-LD, LE-MD) as the between-subjects factor, for each of the two clusters of fables.

2.4.3. Effect of Gender

Empathy: To investigate the potential effect of gender on empathy, a one-way ANOVA was performed with *gender* (male, female) as the independent variable and *empathy component* (empathy-related, distress-related) as the dependent variable. Six participants were excluded as they selected "other" as gender (not male or female).

Aesop's Fables: For the gender analysis, a 2 (*gender*: *male*, *male*) × 3 (*perspective*: *offender*, *victim*, *observer*) × 2 (*emotion*: *negative*, *positive*) mixed ANOVA was conducted for each cluster of fables.

3. Results

3.1. Analysis of Emotion Ratings to Aesop's Fables

Principal Component Analysis (PCA)

To investigate the value and intensity of the emotions aroused by the fables, we first inspected participants' ratings across all fables and perspectives. Raw values were z-scored and then converted to STEN scores, for simplicity and interpretability purposes (Figure 2(A)). STEN scores are computed by multiplying the z-score with the standard deviation and add the mean.

Results revealed that the first two components fulfilled the eigenvalue criterion, explaining 43.182% and 21.364% of the total variance, respectively (cumulative % = 64.546). A scree plot demonstrated that two components were a reasonable choice (eigenvalue > 1; scree plot available on request from the authors). The correlation between the two factors after rotation was at .014. As shown in Figure 2(B), component 1 exhibited high loadings on negative emotions (anger, sadness, disgust, fear), as well as surprise, while component 2 exhibited high loadings on positive emotions (joy, trust), including anticipation.

3.2. Clustering of Aesop's Fables

Hierarchical *k*-Means Clustering

We then attempted to investigate how perspective-taking influenced emotion ratings. Factor scores as generated by the PCA (see Section 3.1.1) were first converted to STEN scores. Figure 3(A) depicts bar plots of the factor scores derived from the PCA analysis, separately for each perspective and emotional value. Overall, participants seemed to score higher for negative compared to positive emotions for the perspective of the victim, while the reverse was the case for the perspective of the offender. The emotions for the perspective of the observer had lower intensity overall.

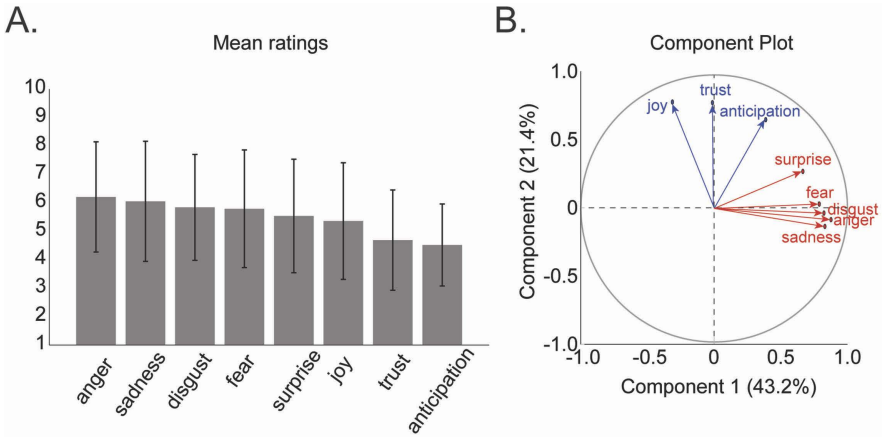

Figure 2. Emotion ratings in the Aesop's Fables task. (A) Mean and standard deviation of the ratings (STEN scores) to each emotion over all fables, perspectives, and participants. Error bars represent ±1 standard deviation; (B) Component plot of the Principal Component Analysis on the reported intensity of emotions induced by Aesop's Fables. Component 1 (red) shows higher contributions for negative emotions, whereas Component 2 (blue) shows higher contributions for positive emotions.

The average PCA factor scores (positive and negative) for each perspective (offender, victim, observer) were subjected to hierarchical cluster analyses (Ward's method) using squared Euclidean distances (Figure 3(B)). The elbow method revealed that 2 was the most appropriate number of clusters. A non-hierarchical *k*-means algorithm using the same initial cluster centers confirmed the same 2-cluster solution as the hierarchical procedure (Figure 3(C)).

Overall, cluster 1 was characterized by higher intensity emotions, more positive for the offender and more negative for the victim. The observer resembled the emotions of the victim, but with a lower intensity. This is in line with the content of those 7 fables, in which the offender clearly hurts the victim. For reasons of simplicity, we call this cluster "unambiguous" cluster of fables. On the other hand, cluster 2 showed lower intensity emotions, more negative for the offender, whereas more positive for the victim. Also, the observer showed very low

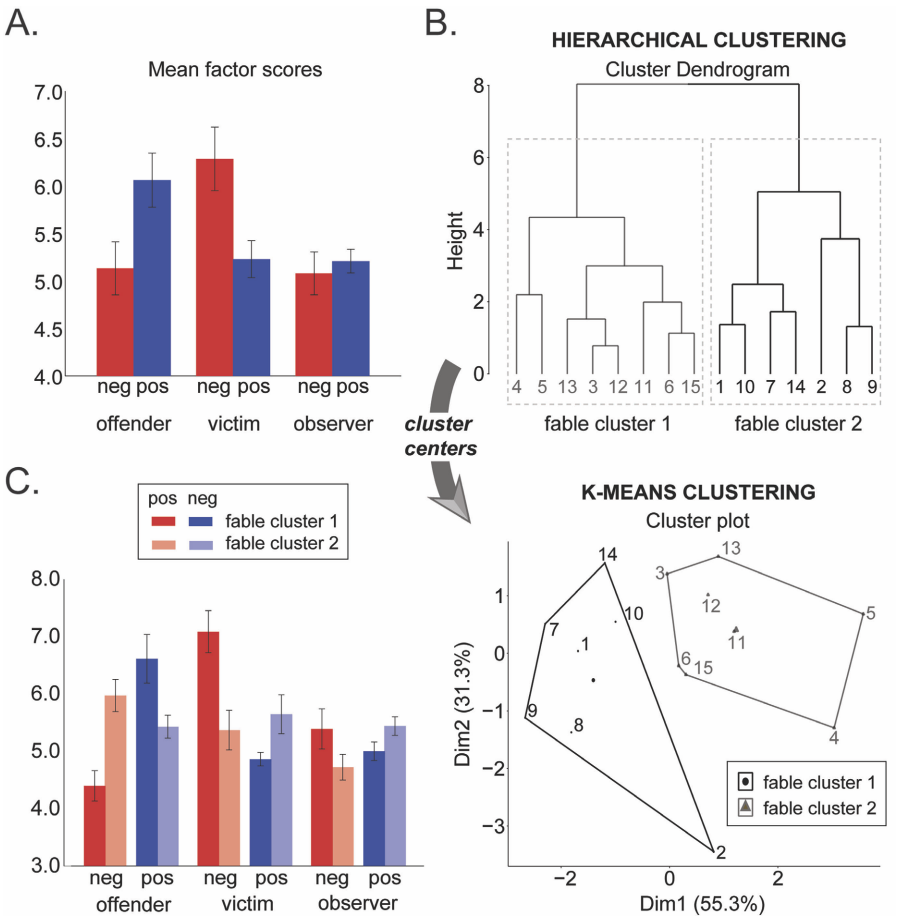

Figure 3. Hierarchical *k*-means cluster analysis of Aesop's Fables. (A) Average factor scores over all fables, as resulted from the Principal Component Analysis in section 3.1.1.; (B) Top: Cluster dendrogram of the 15 Aesop's Fables derived from the hierarchical cluster analysis (2 clusters of fables highlighted). Bottom: Cluster plot of the 15 Aesop's Fables from the *k*-means cluster analysis, using the cluster centers from the hierarchical cluster analysis. Observations are represented by points; (C) Average factor scores for each of the two clusters of fables, for each perspective (offender, victim, and observer) and emotion component (negative, positive). Error bars represent ±1 *SEM.*

negative emotions. This is in line with the content of those 8 fables, in which the offender did not manage to hurt the victim or was even tricked by the victim. Cluster 2 is thus called "ambiguous" throughout the manuscript.

3.3. Analysis of Empathy Scores

3.3.1. Correlations

Before conducting the correlations between empathy scores, we performed a repeated-measure ANOVA between the scores of the IRI subscales. Results revealed that the scores differed significantly ($F(3, 900) = 119.526$, $p < .001$, $\eta^2 = .285$). Planned contrasts showed that participants scored significantly higher on empathic concern compared to all other subscales (EC-PT: $t(300) = 4.399$, $p < .001$; EC-FS: $t(300) = 4.215$, $p < .001$; EC-PD: $t(300) = 17.227$, $p < .001$), while personal distress showed the lowest scores (PD-FS: $t(300) = -12.466$, $p < .001$; PD-PT: $t(300) = -12.226$, $p < .001$).

We then explored correlations between participants' empathy scores in the TEQ and the four subscales of the IRI (**Figure 4(A)**). All scales were significantly positively correlated with each other, except IRI personal distress (PD) and IRI perspective taking (PT) which was not significant. TEQ correlated strongly with IRI empathic concern (EC) ($r = .80$), moderately with PT ($r = .49$) and IRI fantasy scale (FS) ($r = .45$), and weakly with PD ($r = .13$).

3.3.2. Principal Component Analysis (PCA)

A PCA was employed to analyze the correlation structure between all empathy scores (TEQ, PT, FS, EC, and PD). Two components accounted for 72.620% of the total variance, 50.123% and 22.497%, respectively. A scree plot demonstrated that two components were a reasonable choice (eigenvalue > 1; scree plot available on request from the authors). The correlation between the two factors after rotation was at .124. As shown in **Figure 4(B)**, Component 1 was largely dominated by TEQ and EC, as well as PT and less FS, suggesting that these dimensions are strongly related ("empathy-related" component or empathy, for simplicity). Component 2 was mainly driven by PD, which was inversely related to PT. There was a small contribution of the FS. Thus, we call this "distress-related" component or distress, for simplicity, throughout the manuscript.

3.3.3. Hierarchical *k*-Means Clustering of Subjects Based on Empathy

We used the empathy components extracted from the PCA analysis in section 3.3.2. to split participants into separate groups. The average PCA factor scores (empathy-related and distress-related) for each participant were subjected to hierarchical cluster analyses (Ward's method) using squared Euclidean distances. The elbow method revealed that three was the most appropriate number of clusters. A non-hierarchical *k*-means algorithm using the same initial cluster centers confirmed the three-cluster solution (**Figure 5(A)**). Overall, group 1 ($N = 114$) showed both high empathy-related and distress-related contributions (HE-HD), group 2 ($N = 90$) showed high empathy-related but low distress-related

(HE-LD), while group 3 (N = 97) showed low empathy but moderate distress (LE-MD) contributions (Figure 5(B)).

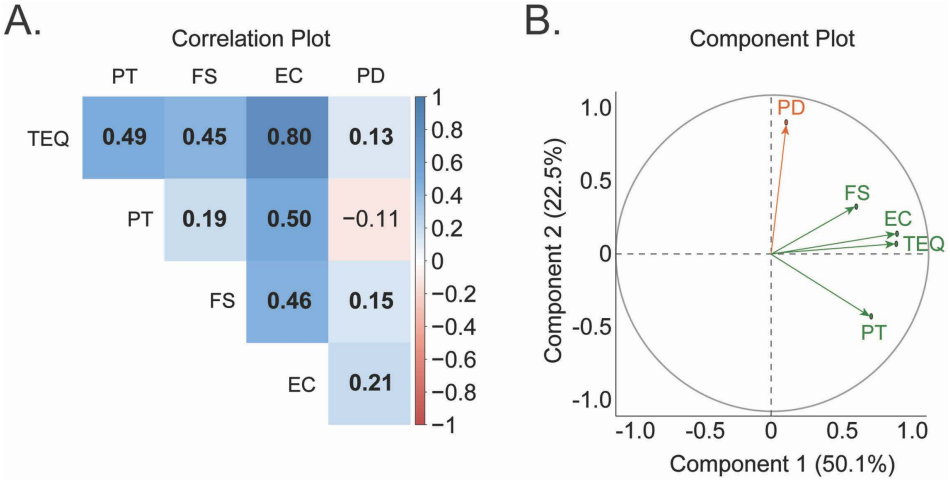

Figure 4. Analysis of participants' empathy scores. (A) Correlation plot between all empathy scores, i.e. the Toronto Empathy Questionnaire (TEQ) and the four subscales of the Interpersonal Reactivity Index (IRI): perspective-taking (PT), fantasy scale (FS), empathic concern (EC), and personal distress (PD). Values represent the Pearson r coefficient between the respective variables. Significant correlations are marked in bold; (B) Component plot of the Principal Component Analysis on all empathy scales (TEQ, IRI). Component 1 (green) shows higher contributions for all empathy-related scales, whereas Component 2 (orange) shows higher contributions for personal distress only.

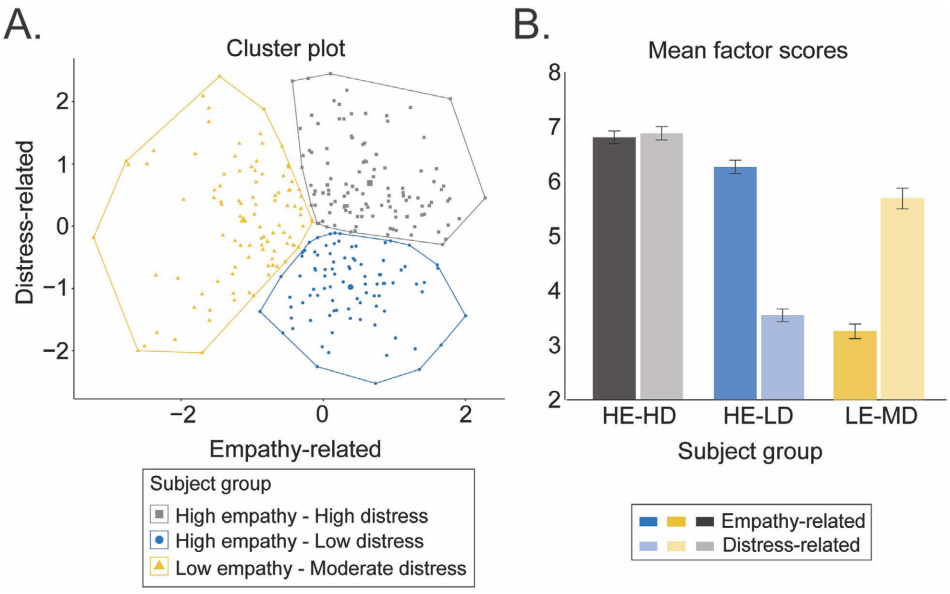

Figure 5. Hierarchical k-means cluster analysis on participants based on their empathy scores. (A) Cluster plot of the 301 participants from the k-means cluster analysis, using the cluster centers from the hierarchical cluster analysis. Participants are represented by points; (B) Average factor scores for each of the three clusters of participants, for each empathy component (empathy-related, distress-related). Error bars represent ±1 *SEM*. Group 1 showed both high empathy and distress (HE-HD), group 2 showed high empathy but low distress (HE-LD), while group 3 showed low empathy but moderate distress.

3.4. Relationship between Empathy and Emotion Ratings to Aesop's Fables

A mixed ANOVA with emotion (positive, negative) and perspective (offender, victim, observer) as the within-subjects factors and empathy group (HE-HD, HE-LD, LE-MD) as the between-subjects factor was conducted separately for each cluster of fables (ambiguous, unambiguous) (Figure 6).

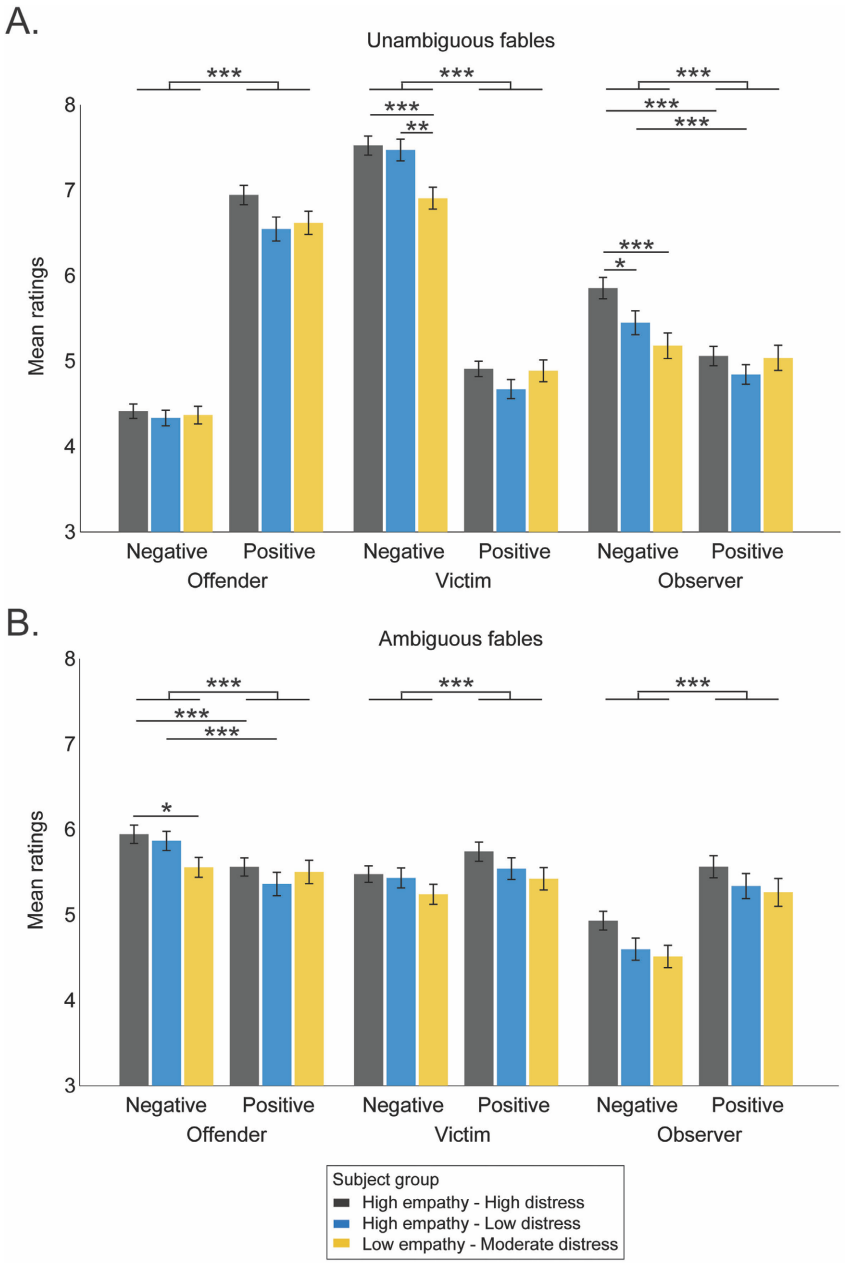

Figure 6. Average ratings of emotion induction by Aesop's Fables, separately for the three perspectives (offender, victim, and observer), for negative vs. positive emotions, and for the three groups of participants (high empathy-high distress; high empathy-low distress; and low empathy-moderate distress). (A) For the cluster of unambiguous fables; (B) For the cluster of ambiguous fables. Error bars represent ±1 *SEM.* * $p < .05$, ** $p < .01$, *** $p < .001$.

In cases when the offender clearly tricked or hurt the victim ("unambiguous" fables), participants scored overall significantly higher for negative compared to positive emotions (main effect of *emotion*: $F(1, 298) = 24.096$, $p < .001$, $\eta^2 = .075$) (**Figure 6(A)**). There was also a significant main effect of *perspective* ($F(2, 596) = 242.810$, $p < .001$, $\eta^2 = .449$). Pairwise comparisons showed that the victim had significantly higher ratings than both the offender ($t(300) = 17.137$, $p < .001$) and the observer ($t(300) = 19.275$, $p < .001$), while also the offender was rated higher than the observer ($t(300) = 7.489$, $p < .001$). The interactions between *emotion* and *empathy group* ($F(2, 298) = 7.851$, $p < .001$, $\eta^2 = .050$), *emotion* and *perspective* ($F(2, 596) = 1410.425$, $p < .001$, $\eta^2 = .826$), and *emotion*, *perspective* and *empathy group* ($F(4, 596) = 6.676$, $p < .001$, $\eta^2 = .043$) were also significant. To understand the interactions, we conducted a mixed ANOVA for each perspective. From the perspective of the offender, positive emotions were scored higher than negative emotions (main effect of *emotion*: $F(2, 298) = 1448.910$, $p < .001$, $\eta^2 = .829$). From the perspective of the victim, negative emotions were scored higher than positive emotions (main effect of *emotion*: $F(1, 298) = 1012.772$, $p < .001$, $\eta^2 = .773$). Results also revealed a significant main effect of *empathy group* ($F(2, 298) = 3.023$, $p = .050$, $\eta^2 = .020$), which was due to the HE-HD group exhibiting higher ratings than the LE-MD group ($t(209) = 2.466$, $p = .014$). There was also a significant interaction between *emotion* and *empathy group* ($F(2, 298) = 8.818$, $p < .001$, $\eta^2 = .056$). Pairwise comparisons showed that this was due to both the HE-HD group ($t(209) = 3.656$, $p < .001$) and the HE-LD group ($t(185) = 3.125$, $p = .002$) reporting stronger negative emotions than the LE-MD group. All groups reported stronger negative compared to positive emotions (HE-LD: $t(89) = 21.215$, $p < .001$; LE-MD: $t(96) = 13.050$, $p < .001$; HE-HD: $t(113) = 22.365$, $p < .001$). From the perspective of the observer, negative emotions were scored higher than positive emotions (main effect of *emotion*: $F(1, 298) = 58.263$, $p < .001$, $\eta^2 = .164$). There was also a significant interaction between *emotion* and *empathy group* ($F(2, 298) = 8.527$, $p < .001$, $\eta^2 = .054$). Pairwise comparisons showed that this was due to the HE-HD group showing stronger ratings for negative emotions compared to LE-MD ($t(209) = 3.501$, $p < .001$) and HE-LD ($t(202) = 2.169$, $p = .031$). HE-LD ($t(89) = 5.538$, $p < .001$) and HE-HD ($t(113) = 6.948$, $p < .001$) reported stronger negative compared to positive emotions, but that was not the case for LE-MD ($p = .246$).

In contrary to the unambiguous fables, in the ambiguous fables participants gave higher ratings for the positive compared to the negative emotions (main effect of *emotion*: $F(1, 298) = 16.902$, $p < .001$, $\eta^2 = .054$) (**Figure 6(B)**). There was also a significant main effect of *perspective* ($F(2, 596) = 155.779$, $p < .001$, $\eta^2 = .343$). Pairwise comparisons showed that the offender was rated significantly higher than both the victim ($t(300) = 7.237$, $p < .001$) and the observer ($t(300) = 14.301$, $p < .001$), while also the victim was rated higher than the observer ($t(300) = 11.244$, $p < .001$). The interactions between *emotion* and *perspective* ($F(2, 596) = 120.767$, $p < .001$, $\eta^2 = .288$), and *emotion*, *perspective* and *empathy group* ($F(4, 596) = 3.005$, $p = .018$, $\eta^2 = .020$) were also significant. To explain the inte-

ractions, a mixed ANOVA was conducted for each perspective. From the offender's perspective, negative emotions were scored higher than positive emotions (main effect of *emotion*: $F(1, 298) = 25.427$, $p < .001$, $\eta^2 = .079$), in line with what we expected, given that in the ambiguous fables the offender fails to trick the victim or is even tricked by the victim. There was also a significant interaction between *emotion* and *empathy group* ($F(2, 298) = 4.445$, $p = .013$, $\eta^2 = .029$). Pairwise comparisons showed that this was due to HE-HD exhibiting higher ratings for negative emotions compared to LE-MD ($t(209) = 2.447$, $p = .015$). Further, HE-LD ($t(89) = 4.341$, $p < .001$) and HE-HD ($t(113) = 3.709$, $p < .001$) reported stronger negative compared to positive emotions, but that was not the case for LE-MD ($p = .593$). Thus, similarly with what we found for the unambiguous fables, the intensity of the reported emotions seems to be regulated by the empathy component rather than the distress component. From both the victim's and the observer's perspective, positive emotions were scored higher than negative emotions (main effect of *emotion*: $F(1, 298) = 10.810$, $p < .001$, $\eta^2 = .035$; $F(1, 298) = 129.486$, $p < .001$, $\eta^2 = .303$, respectively).

3.5. Effect of Gender

3.5.1. Empathy

A one-way ANOVA was performed with gender (male, female) as the independent variable and empathy component (empathy-related, distress-related) as the dependent variable. We found significantly higher empathy scores for females compared to males in both scores (empathy-related: $F(1, 293) = 19.310$, $p < .001$, 5.014 ± 1.900 for males, 6.006 ± 1.977 for females; distress-related: $F(1, 293) = 9.860$, $p = .002$, 5.129 ± 2.126 for males, 5.847 ± 1.783 for females). These findings are in line with previous research revealing gender differences -specifically a female superiority—in empathy, and will be discussed further in the Discussion section.

3.5.2. Aesop's Fables

For the unambiguous fables, a 2 (gender) × 3 (perspective) × 2 (emotion) mixed ANOVA revealed a significant interaction between *gender*, *perspective*, and *emotion* ($F(2, 586) = 7.419$, $p = .001$, $\eta^2 = .025$). Pairwise contrasts showed no significant differences between males vs. females in any of the variables ($p > .09$). Similarly, for the ambiguous fables, a significant interaction between *gender*, *perspective*, and *emotion* ($F(2, 586) = 3.170$, $p = .043$, $\eta^2 = .011$) was found. Pairwise contrasts showed no differences between gender groups in any of the variables ($p > .4$). See Supplementary Material for a report of the ANOVA results not related to gender. This is an interesting result that comes in contrast to the gender effect identified in the empathy questionnaires (Section 3.5.1). However, this asymmetry between the findings we obtained with the two empathy questionnaires (gender effect) and the "Aesop's Fables" findings (no gender effect) seems to be consistent with research showing that gender differences in empathy vary substantially depending on the method of assessment. This as-

sessment method specificity will be discussed further in the Discussion section.

4. Discussion

In this study, we investigated the sensitivity of an emotional perspective-taking task using Aesop's Fables in relation to empathy. A sample of 301 participants rated the intensity of the emotions they would feel by adopting the perspective of the offender, the victim, or the observer in 15 short fables. By analyzing participants' ratings on the task as well as their scores on two empathy questionnaires (IRI, TEQ), we contributed five main findings: 1) Subjects showed successful perspective-taking in response to the Aesop's Fables, which was reflected in differentiated responses according to perspective; 2) Subjects' ratings from the observer's perspective resembled those of the victim, suggesting affective sharing processes; 3) All components of empathy were positively related with negative emotion ratings from the victim's perspective; 4) Participants with both high empathy and distress reported the strongest negative emotions from the observer's perspective; and 5) Responses to Aesop's task were independent from gender.

Evidence for empathic feelings for the protagonists of Aesop's Fables

First, an exploratory approach categorized emotions into positive vs. negative, based on participants' ratings. Joy, trust, and anticipation were considered positive emotions, whereas surprise, fear, disgust, anger, and sadness were considered negative emotions. Noteworthy, placing surprise and anticipation into opposite valence spaces is aligned to Plutchik & Kellerman's categorical conception of those emotions as a pair of opposites (Plutchik & Kellerman, 1980). However, contrary to our findings, previous studies have assigned a positive valence to surprise (e.g., Siegert et al., 2011). Nevertheless, in our study, the factor loadings for surprise and anticipation were rather balanced, therefore their categorization was rather marginal. This is in line with Zevon and Tellegen (1982), who found that surprise failed to fall clearly into one valence component. This might be because the notion of surprise has a variety of different connotations related to notions like "shock", "freeze" or even "disgust" (Fromme & O'Brien, 1982). Another explanation could be that surprise and anticipation are context-dependent. Namely, the valence of surprise (anticipation) is related to the valence of the surprising (anticipated) stimulus. Interestingly, in a study on the dimensional classification of emotions, Shah and Lewis (2003) distinguish between "mild surprise" and "happy surprise" with these two labels falling into opposite valence spaces, a finding that supports the context-dependency argument. Corroborating evidence comes from neurophysiological studies showing that the anticipation of negative stimuli employs different neural networks compared to positive stimuli (e.g., Herwig et al., 2007; Ueda et al., 2003). Therefore, it is possible that the context-dependency of surprise and anticipation is responsible for the rather balanced results we have obtained regarding their valence, since Aesop's fables involve both positive and negative surprise and antic-

ipation situations. Finally, it should be noted that the emotions used in the Aesop's Fables task were constrained, which might have not captured the full range of emotions induced by the fables. Nevertheless, our data-driven procedure successfully extracted two main components (negative, positive), suggesting that all the emotions used were at some degree relevant. Future studies are recommended to identify all the emotions induced by the fables.

Results showed that participants showed empathy towards Aesop's Fables characters, as demonstrated by successful emotional perspective-taking. A data-driven approach revealed that participants rated emotions differentially based on whether the offender managed to trick the victim. Specifically, they felt strong negative (positive) emotions from the victim's (offender's) perspective when the latter was clearly hurt (unambiguous fables). The opposite was the case when the victim managed to escape or hurt the offender (ambiguous fables), i.e. participants reported strong negative (positive) emotions from the offender's (victim's) perspective. This suggests successful emotional perspective-taking, which is differentiated according to the content of each fable.

From the observer's perspective, subjects seemed to sympathize with the victim rather than the offender. Specifically, as observers, participants scored higher negative emotions than positive emotions in the unambiguous fables, while the reverse was true for the ambiguous fables. This is in line with the affective sharing dimension of empathy, which refers to the motivation to care for others that are in need (Decety & Cowell, 2015).

According to the dual judgement model (Van Boven & Loewenstein, 2005), first people estimate how they would react to the emotional situation of another person, and, second, they adjust these self-estimates to make judgements about the emotional state of the other person. This usually leads to inaccuracy in emotional perspective-taking, as people tend to overestimate the similarity between themselves and others (Ross et al., 1977). Furthermore, there is a tendency to underestimate the amount that a certain emotional situation would influence our attitude and behaviour (phenomenon called "empathy gap"; Van Boven et al., 2013), as well as a tendency to employ empathy mechanisms in a way that is regulated by our in-group/out-group conceptions, namely a tendency to show empathy mostly for in-group members (e.g., Stürmer et al., 2006). Interestingly, animals also show a preference for in-group members compared to strangers (e.g., Decety & Cowell, 2015; Jeon et al., 2010). For example, female mice show enhanced fear responses when exposed to the pain of a close relative compared to when exposed to the pain of a more distant relative (Jeon et al., 2010). Noteworthy, Angantyr and colleagues (2011) found that humans express the same degree of empathy for a child or a baby as for an animal, and specifically a puppy. Based on the aforementioned literature, the Aesop's Fables task might potentially offer as a tool free from in-group empathy biases, due to the prominence of animals as protagonists, to which humans cannot express preferences. This could constitute a substantial advantage for its use in empathy-related research

in humans.

Finally, we believe that the very fact that the Aesop task consists of fables with animal protagonists is a positive and convenient element in case that someone decides to use this task in empathy studies with children populations, in which a self-report instrument would be unsuitable. Given the results obtained in the present study which reveal a sensitivity of the Aesop task to certain aspects of empathy in a general population of adults, we think that a further step in the development and refinement of this task could be a similar study carried out in populations of children and adolescents. This would help us introduce the use of Aesop's Fables task in a very vigorous but also laborious line of research, namely the study of the effects of age on empathy.

Relationship between emotional perspective-taking as assessed in the Aesop's Fables task and empathy

First of all, we observed that empathy as assessed in the TEQ was highly positively correlated with empathic concern, moderately with the perspective-taking and the fantasy scale, and weakly with personal distress. This is consistent with Spreng and colleagues (2009), suggesting that TEQ constitutes a broad measure of empathy tapping onto both emotional and cognitive aspects. Specifically, Spreng et al. found a strong positive correlation between TEQ and IRI empathic concern, a lower although still positive correlation with IRI perspective taking, and a rather moderate positive correlation with the IRI fantasy scale. Moreover, in our view, the weak positive TEQ-PD correlation found in the present study seems to reflect the fact that Spreng et al. did not think of PD as being a core empathy component and thus they totally excluded the IRI PD items from the initial items pool from which the final TEQ version was drawn.

All subscales of the IRI were also significantly positively correlated with each other, except personal distress and perspective-taking which were not correlated. Given the large sample size (N = 301), these correlations appeared significant but weak. This finding is in line with the results obtained by Davis (1980) who found a positive correlation among the IRI subscales with the exemption of personal distress and perspective taking, which was a weak negative correlation. Precisely, Davis has reported a positive but weak correlation of PT with FS, a bit stronger and positive correlation of PT with EC and a weak negative correlation of PT with PD. Also, Davis has reported a rather weak positive correlation of FS with EC and an even weaker with PD. Finally, Davis found that EC had a quite weak positive correlation with PD. A similar pattern of correlations was revealed in the present study.

Our findings with regards to the relationship between the empathy scales seem to be in agreement with factor analysis and validity studies that have shown that the IRI personal distress subscale probably does not assess a core component of empathy (Cliffordson, 2001); rather it might be more related to personality traits like neuroticism. EC and PT are linked to the more central components of empathy (Alterman et al., 2003), a rationale followed also by

Spreng et al. during the development of the TEQ scale. Finally, the small but existent contribution of IRI FS to the "distress-related" component, could probably be explained through a view supporting that the FS and PD IRI subscales are respectively linked more to the functions of imagination and self-control. Thus, FS and PD might be more distant from the core of the empathy-related factors compared to the rest of the IRI subscales (Baron-Cohen & Wheelright, 2004).

With regards to perspective-taking in the Aesop's Fables task, participants exhibited substantial differentiation in their responses, based on the content of the fables. Specifically, for the "unambiguous" fables, negative emotions were rated higher compared to positive emotions from the perspective of the victim. This dominance of the negative emotions can be explained by the content of these fables, in which the offender clearly tricks and/or hurts the victim. Importantly, participants with high empathy exhibited stronger negative emotions from the victim's perspective than participants with low empathy, independently of their level of distress. Thus, it seems that at least with regards to the intensity of the reported emotions in an emotional perspective taking task, the empathy component has a more central role than the distress component. This is in line with the view that, compared to other empathy components like perspective-taking and empathic concern, personal distress does not necessarily reflect a core component of empathy (Spreng et al., 2009). As expected, from the perspective of the offender, positive emotions were scored higher than negative emotions, as participants considered that the offender was content for succeeding to hurt the victim.

From the observer's perspective, participants felt stronger negative compared to positive emotions, suggesting that they identified themselves with the victim rather than the offender. Interestingly, subjects with both high empathy and distress experienced enhanced negative emotions compared to subjects with high empathy and low distress, as well as subjects with low empathy and moderate distress. Therefore, distress seems to influence the view of the observer, with high distress subjects experiencing more negative emotions than low distress subjects.

In contrary to the unambiguous fables, in the "ambiguous" fables, participants rated higher the positive compared to the negative emotions from both the victim's and the observer's perspective. From the offender's perspective, however, negative emotions were scored higher than positive emotions. These findings are in line with what we expected, given the content of the ambiguous fables in which the offender fails to trick the victim or is even tricked by the victim. Furthermore, results reveal a dominance of the victim's perspective leading participants to rate higher the positive than the negative emotions.

From the offender's perspective, subjects with high empathy reported higher negative than positive emotions, irrespectively of their distress level. Furthermore, subjects with both high empathy and distress felt stronger negative emotions compared to subjects with low empathy or low distress. Considering that participants exhibited overall higher scores in the empathic concern subscale, in

comparison to the other IRI subscales, our findings might provide evidence for an increased tendency to identify with the victim via the observer's perspective. Overall, our results provide evidence that empathy influences emotional perspective-taking in response to the Aesop's Fables.

Effect of gender on empathy and on the Aesop's Fables task

As expected, women displayed significantly higher empathy in both empathy-related and distress-related components. This is in line with previous research showing gender differences in empathy (e.g., Davis, 1980, 1983; Macaskill et al., 2002; Schieman & Van Gundy, 2000; Spreng et al., 2009), as women might be more motivated to be empathic (Klein & Hodges, 2001) and other measures of empathic tendencies (Mehrabian & Epstein, 1972). Interestingly, gender differences did not emerge in emotion ratings in the Aesop's Fables task.

This is consistent with existing findings demonstrating that gender differences in empathy vary substantially depending on the method of assessment. Specifically, gender differences hold when empathy is measured with self-report questionnaires (O'brien et al., 2013; Rueckert et al., 2011; Toussaint & Webb, 2005). However, those do not emerge when empathy is evaluated with experimental tasks (Derntl et al., 2010) or physiological measures (Christov-Moore et al., 2014; Michalska et al., 2013). It has been suggested that self-report measures of empathy might be influenced by gender-related social norms (Klein & Hodges, 2001; Michalska et al., 2013; O'brien et al., 2013). As such, women might present themselves as empathic, as emotionality is a stereotypical feminine role (Eisenberg & Lennon, 1983). What is more, both genders support the generalizations that women are more sensitive and emotional than men (Belk & Snell Jr, 1986). The aforementioned evidence might suggest that gender differences might emerge due to stereotypes activated by self-report questionnaires. This might not be the case for behavioural and physiological instruments that measure empathy indirectly, similarly to the Aesop's Fables task, which can be more suitable to measure empathy avoiding social desirability biases.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Supplementary Material

Material

Aesop's Fables

1) THE MONKEY AND THE CAMEL: Someday, the forest animals organized a great feast, during which the Monkey stood up and danced. Having entertained the animal company, he sat down amidst cheers. The camel envied monkey the applause and, wishing to receive the same acclaim, stood on his hind legs, and started to dance. Nevertheless, he danced in such a ridiculous and clumsy way that the animals rushed angrily and kicked him out of the feast.

a) If I were in the camel's "position", I would feel

b) If I were in the monkey's "position", I would feel

c) As I am following the story "right now", I feel

2) THE NORTH WIND AND THE SUN: The North Wind and the Sun were arguing over who was the stronger. Suddenly they saw an approaching traveler. "I see a way to settle our dispute. Whoever of us can make that traveler take off his cloak shall be regarded as the stronger". "You begin," said the Sun and retired behind a cloud. The North Wind began to blow as hard as he could upon the traveler, but the harder he blew, the closer the traveler wrapped his cloak round him, till at last, the North Wind had to give up. Then the Sun came out and shone in all his glory upon the traveler, who put off his cloak, feeling too hot.

a) If I were in the Sun's "position", I would feel

b) If I were in the North Wind's "position", I would feel

c) As I am following the story "right now", I feel

3) THE TWO FROGS: Two frogs were once neighbors. One of them dwelt in a deep pond far removed from people while the other dwelt in a ditch with some water next to a busy road. The former warned his friend to change abode and invited him to come and live by him, saying that he would enjoy greater safety and ample food. The latter frog rejected the invitation saying that he could not leave the place to which he had been accustomed. Unfortunately, some days later, a big wagon passed through and crushed the poor frog under its wheels.

a) If I were in the "position" of the frog of the deep pond, I would feel

b) If I were in the "position" of the frog in the ditch, I would feel

c) As I am following the story "right now", I feel

4) THE TWO CRABS: One fine day two crabs came out of their home to take a stroll on the sand. "Child," said the mother, "you walk very ungracefully. You should get used to walking straight ahead gracefully rather than walking sideways." "You are right, mother," said the young one, "set the example yourself, and I will follow you."

a) If I were in the mother's "position", I would feel

b) If I were in the child's "position", I would feel

c) As I am following the story "right now", I feel

5) THE TREE AND THE REED: "Well, little one," said a huge tree to a reed

that was growing at its foot, "why do you not plant your root deeply in the ground so that you can grow taller like me?" "I am contented with my lot," said the reed. "I may not be so grand, but I feel more safe." "Safe!" sneered the Tree. "Who could uproot me or make me bend to the ground?" Nevertheless, it would soon have to regret its boasting, for a strong wind arose which tore it up from its roots, and cast it, a useless log, on the ground. On the other hand, when the storm had passed, the reed bending to the force of the wind, soon stood upright again.

a) If I were in the reed's "position", I would feel

b) If I were in the tree's "position", I would feel

c) As I am following the story "right now", I feel

6) THE FOX AND THE LION: A fox saw a lion imprisoned in a cage. It stood next to him and started reviling him. The lion said: "It is not me whom you revile but this misfortune which has befallen me."

a) If I were in the lion's "position", I would feel

b) If I were in the fox's "position", I would feel

c) As I am following the story "right now", I feel

7) THE SICK LION: An old Lion, unable to procure his food through violence, decided to procure it through guile. It lay down in his den, pretending to be sick and made sure his sickness became publicly known. The other animals started arriving to express their compassion, but the lion devoured them. After many animals disappeared, the Fox, who understood the lion's ruse, stood outside his den at a safe distance and asked him how he was. "So and so," replied the lion. "But why don't you come in for a chat?" "Because I see many footprints entering your den, but none leaving it," the fox answered.

a) If I were in the frog's "position", I would feel

b) If I were in the scorpion's "position", I would feel

c) As I am following the story "right now", I feel

8) THE SCORPION AND THE FROG: The Scorpion and the Frog met on a riverside, and the scorpion asked the frog to carry him across. The frog questioned then: "How can I be sure that you will not sting me?" and the scorpion answered: "Because if I do, I will die too." The frog, satisfied by the answer, agreed to take him across, but in midstream, the scorpion stung the frog. The latter started to paralyze and, while sinking, managed to ask in a muffled voice, "Why?" "Because it is in my nature to do so…" the scorpion answered.

a) If I were in the lion's "position", I would feel

b) If I were in the oxen's "position", I would feel

c) As I am following the story "right now", I feel

9) THE FOUR OXEN AND THE LION: A Lion used to prowl for food in a field in which four Oxen pastured. Many a time, it tried to attack them, but whenever it came near, they turned their tails to each other so that the lion would always meet the horns of one of them. Finally, the oxen started quarreling among themselves, and each went off to pasture alone in a separate corner of the

field. Then the Lion attacked them one by one and soon killed all four.

a) If I were in the goat's "position", I would feel

b) If I were in the fox's "position", I would feel

c) As I am following the story "right now", I feel

10) THE FOX AND THE GOAT: By an unlucky chance, a fox fell into a deep well from which he could not get out. A goat passed by and asked the fox what he was doing down there. "Oh, have you not heard?" said the Fox, "there is going to be a great drought, so I jumped down here in order to be sure to have water nearby. Why don't you come down too?" The goat considered this advice and jumped down into the well. But immediately, the fox jumped on his back and then on his long horns and managed to jump out of the well. "Good-bye, friend," said the Fox, "and remember in the future not to take account of the advice of someone in difficulties."

a) If I were in the fox's "position", I would feel

b) If I were in the lion's "position", I would feel

c) As I am following the story "right now", I feel

11) THE FOX AND THE MONKEY: The Fox and the Monkey were traveling together. While passing by a cemetery, the monkey told the fox: "Do you see all these monuments? They were made in honor of my ancestors, who were citizens of great fame". The fox answered: "You chose the most appropriate participant for your lies since you are sure that none of your ancestors will refute them."

a) If I were in the monkey's "position", I would feel

b) If I were in the fox's "position", I would feel

c) As I am following the story "right now", I feel

12) THE GOATHERD AND THE GOAT: A goatherd was looking for a stray goat to return it to his flock. He whistled and sounded his horn in vain. The goat paid no heed to the summons. Finally, the Goatherd threw a stone and broke the goat's horn. However, he begged the Goat not to tell his master about that. The Goat replied, "Why, you silly fellow, I will say nothing. My horn will speak for itself".

a) If I were in the goat's "position", I would feel

b) If I were in the goatherd's "position", I would feel

c) As I am following the story "right now", I feel

13) THE FOX AND THE LION A: fox entered into a partnership with a Lion. Each undertook his proper duty following his nature and strength. The Fox would spot and point out the prey; the Lion would spring upon it and seize it. The Fox soon became jealous as the Lion would snatch "the lion's share" and said that he would abandon the partnership and capture the prey on his own. The next day he attempted to snatch a lamb from the fold, but he fell prey to the huntsmen and hounds.

a) If I were in the fox's "position", I would feel

b) If I were in the lion's "position", I would feel

c) As I am following the story "right now", I feel

14) THE BOY AND THE PASSER-BY: A boy bathing in a river was in danger of drowning. He called out to a passing traveler for help but, instead of holding out a helping hand, the man stood by and started scolding the boy for his imprudence. "Oh, sir!" cried the youth, "help me now and scold me afterward".

a) If I were in the boy's "position", I would feel

b) If I were in the "position" of the passer-by, I would feel

c) As I am following the story "right now", I feel

15) THE CAMEL AND THE ARAB: An Arab camel-driver, having loaded his camel, asked it which it would prefer: going uphill or downhill. The poor beast replied, not without a touch of reason: "Is it that the level way through the desert is closed?"

a) If I were in the Arab camel-driver's "position", I would feel

b) If I were in the camel's "position", I would feel

c) As I am following the story "right now", I feel

Empathy questionnaires

Toronto Empathy Questionnaire (TEQ; Spreng et al., 2009)

Below is a list of statements. Please read each statement carefully and rate how frequently you feel or act in the manner described. There are no right or wrong answers or trick questions. Please answer each question as honestly as you can.

		Never	Rarely	Sometimes	Often	Always
1.	When someone else is feeling excited, I tend to get excited too	0	1	2	3	4
2.	Other people's misfortunes do not disturb me a great deal	0	1	2	3	4
3.	It upsets me to see someone being treated disrespectfully	0	1	2	3	4
4.	I remain unaffected when someone close to me is happy	0	1	2	3	4
5.	I enjoy making other people feel better	0	1	2	3	4
6.	I have tender, concerned feelings for people less fortunate than me	0	1	2	3	4
7.	When a friend starts to talk about his\her problems, I try to steer the conversation towards something else	0	1	2	3	4
8.	I can tell when others are sad even when they do not say anything	0	1	2	3	4
9.	I find that I am "in tune" with other people's moods	0	1	2	3	4
10.	I do not feel sympathy for people who cause their own serious illnesses	0	1	2	3	4
11.	I become irritated when someone cries	0	1	2	3	4
12.	I am not really interested in how other people feel	0	1	2	3	4
13.	I get a strong urge to help when I see someone who is upset	0	1	2	3	4
14.	When I see someone being treated unfairly, I do not feel very much pity for them	0	1	2	3	4
15.	I find it silly for people to cry out of happiness	0	1	2	3	4
16.	When I see someone being taken advantage of, I feel kind of protective towards him\her	0	1	2	3	4

Items 2, 4, 7, 10, 11, 12, 14, and 15 are reversed scored. All responses are summed to generate a total score out of 64, with higher scores indicating more empathy.

Interpersonal Reactivity Index (IRI; Davis, 1980)

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale: A, B, C, D, or E. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can. Thank you.

ANSWER SCALE:

A	B	C	D	E
DOES NOT DESCRIBE ME WELL				DESCRIBES ME VERY WELL

1. I daydream and fantasize, with some regularity, about things that might happen to me. (FS)
2. I often have tender, concerned feelings for people less fortunate than me. (EC)
3. I sometimes find it difficult to see things from the "other guy's" point of view. (PT) (-)
4. Sometimes I don't feel very sorry for other people when they are having problems. (EC) (-)
5. I really get involved with the feelings of the characters in a novel. (FS)
6. In emergency situations, I feel apprehensive and ill-at-ease. (PD)
7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it. (FS) (-)
8. I try to look at everybody's side of a disagreement before I make a decision. (PT)
9. When I see someone being taken advantage of, I feel kind of protective towards them. (EC)
10. I sometimes feel helpless when I am in the middle of a very emotional situation. (PD)
11. I sometimes try to understand my friends better by imagining how things look from their perspective. (PT) Self Report Measures for Love and Compassion Research: Empathy
12. Becoming extremely involved in a good book or movie is somewhat rare for me. (FS) (-)
13. When I see someone get hurt, I tend to remain calm. (PD) (-)
14. Other people's misfortunes do not usually disturb me a great deal. (EC) (-)
15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. (PT) (-)

16. After seeing a play or movie, I have felt as though I were one of the characters. (FS)

17. Being in a tense emotional situation scares me. (PD)

18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. (EC) (-)

19. I am usually pretty effective in dealing with emergencies. (PD) (-)

20. I am often quite touched by things that I see happen. (EC)

21. I believe that there are two sides to every question and try to look at them both. (PT)

22. I would describe myself as a pretty soft-hearted person. (EC)

23. When I watch a good movie, I can very easily put myself in the place of a leading character. (FS)

24. I tend to lose control during emergencies. (PD)

25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while. (PT)

26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me. (FS)

27. When I see someone who badly needs help in an emergency, I go to pieces. (PD)

28. Before criticizing somebody, I try to imagine how I would feel if I were in their place. (PT)

NOTE: (-) denotes item to be scored in reverse fashion

PT = perspective-taking scale

FS = fantasy scale

EC = empathic concern scale

PD = personal distress scale

A = 0

B = 1

C = 2

D = 3

E = 4

Except for reversed-scored items, which are scored:

A = 4

B = 3

C = 2

D = 1

E = 0

Demographics

Age:

Gender:

Male

Female

Other

Part of the United Kingdom where you have spent most of your life:

England
Scotland
Wales
Northern Ireland

Ethnicity (e.g. White/Caucasian, British/Indian, British/Pakistani, British/Bangladeshi, Black British, etc):

Were you already familiar with Aesop's Fables, before taking part in this study?

YES
NO

If you answered "YES" to the previous question, please describe briefly how exactly you learned about Aesop's Fables (e.g. "I was taught Aesop's Fables at school", "my parents taught me Aesop's Fables", "I've heard of them but didn't know them in detail" etc). If you answered "NO" to the previous question, please skip this one.

Highest qualification obtained (e.g. high school, GCSE, undergraduate degree, postgraduate degree, doctorate, etc.):

Procedure

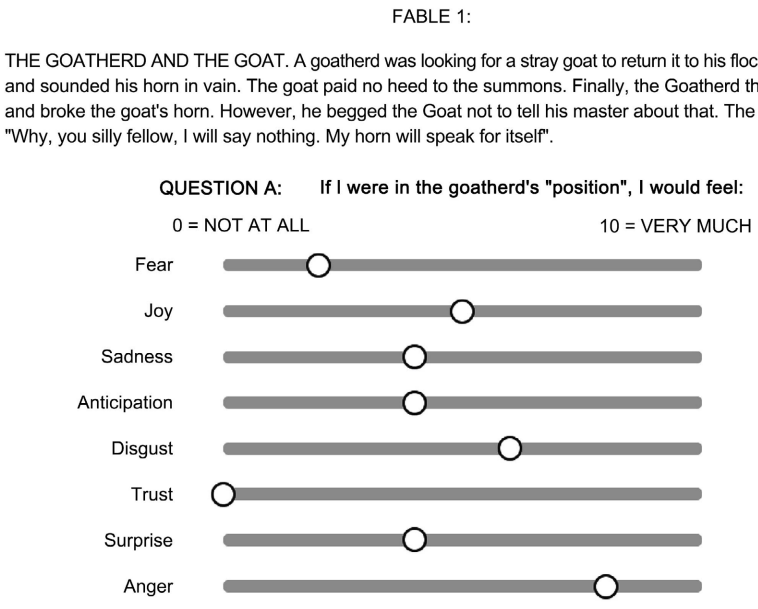

Figure S1. An example of the interface of the Aesop's fables task, as presented for one fable and one perspective-taking statement. All emotions were rated on the same slide. The Gorilla Experiment Builder (https://www.gorilla.sc/) was used to create the online version of the experiment.

Results

Effect of age and gender on Aesop's fables emotion ratings

To test for potential effects of gender on Aesop's fables ratings, a 2 (gender: male, male) × 3 (perspective: offender, victim, observer) × 2 (emotion: negative, positive) mixed ANOVA was conducted. For the unambiguous fables, results revealed that participants scored significantly higher for negative compared to positive emotions (main effect of *emotion*: $F(1, 293) = 24.666$, $p < .001$, $\eta^2 = .078$). There was also a significant main effect of *perspective* ($F(2, 586) = 230.517$, $p < .001$, $\eta^2 = .440$). Pairwise comparisons showed that the victim was rated significantly higher than both the offender ($t(294) = 16.773$, $p < .001$) and the observer ($t(294) = 18.984$, $p < .001$), while also the offender was rated higher than the observer ($t(294) = 7.167$, $p < .001$). The interactions between *emotion* and *perspective* ($F(2, 586) = 1382.686$, $p < .001$, $\eta^2 = .825$), and *emotion*, *perspective* and *gender* ($F(2, 586) = 7.419$, $p = .001$, $\eta^2 = .025$) are analyzed in the main text (Section 3.5.2.).

For the ambiguous fables, results revealed that participants scored significantly higher for positive compared to negative emotions (main effect of *emotion*: $F(1, 293) = 15.464$, $p < .001$, $\eta^2 = .050$). There was also a significant main effect of *perspective* ($F(2, 586) = 145.563$, $p < .001$, $\eta^2 = .332$). Pairwise comparisons showed that the offender was rated higher than both the victim ($t(294) = 7.004$, $p < .001$) and the observer ($t(294) = 13.984$, $p < .001$), while also the victim was rated higher than the observer ($t(294) = 10.963$, $p < .001$). The interactions between *emotion* and *perspective* ($F(2, 586) = 118.857$, $p < .001$, $\eta^2 = .289$), and *emotion*, *perspective* and *gender* ($F(2, 586) = 3.170$, $p = .043$, $\eta^2 = .011$) are analyzed in the main text (Section 3.5.2.).