

Repositório ISCTE-IUL

Deposited in *Repositório ISCTE-IUL*:

2019-01-21

Deposited version:

Post-print

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Zickfeld, J. H. & Schubert, T. W. (2018). Warm and touching tears: tearful individuals are perceived as warmer because we assume they feel moved and touched. *Cognition and Emotion*. 32 (8), 1691-1699

Further information on publisher's website:

[10.1080/02699931.2018.1430556](https://doi.org/10.1080/02699931.2018.1430556)

Publisher's copyright statement:

This is the peer reviewed version of the following article: Zickfeld, J. H. & Schubert, T. W. (2018). Warm and touching tears: tearful individuals are perceived as warmer because we assume they feel moved and touched. *Cognition and Emotion*. 32 (8), 1691-1699, which has been published in final form at <https://dx.doi.org/10.1080/02699931.2018.1430556>. This article may be used for non-commercial purposes in accordance with the Publisher's Terms and Conditions for self-archiving.

Use policy

Creative Commons CC BY 4.0

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a link is made to the metadata record in the Repository
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Warm and Touching Tears:

**Tearful Individuals are Perceived as Warmer Because We Assume They Feel Moved
and Touched**

Janis H. Zickfeld^{1*} Thomas W. Schubert¹²

¹Department of Psychology, University of Oslo, Oslo, Norway

²Instituto Universitário de Lisboa (ISCTE-IUL), Lisboa, Portugal

In press at *Cognition and Emotion*. © 2018 Taylor & Francis. This paper is not the copy of record and may not exactly replicate the authoritative document published in *Cognition and Emotion*. Please do not copy or cite without authors permission. The final article will be available, upon publication, at: 10.1080/02699931.2018.1430556

Word Count (excluding abstract and reference list): 4046

*Corresponding author
Janis H. Zickfeld
Postboks 1094, Blindern
0317 Oslo
Norway
j.h.zickfeld@psykologi.uio.no

Thomas W. Schubert
Postboks 1094, Blindern
0317 Oslo
Norway
thomas.wolfgang.schubert@gmail.com

Abstract

Recent work investigated the inter-individual functions of emotional tears in depth. In one study (Van de Ven, Meijs, & Vingerhoets, 2017) tearful individuals were rated as warmer, and participants expressed more intentions to approach and help such individuals.

Simultaneously, tearful individuals were rated as less competent, and participants expressed less intention to work with the depicted targets. While tearful individuals were perceived as sadder, perceived sadness mediated only the effect on competence, but not on warmth. We argue that tearful individuals might be perceived as warm because they are perceived as *feeling moved and touched*. We ran a pre-registered extended replication of Van de Ven et al. (2017). Results replicate the warmth and helping findings, but not the competence and work effects. The increase in warmth ratings was completely mediated by perceiving feeling moved and touched. Possible functions of feeling moved and touched with regard to emotional tears are discussed.

150/200

Keywords: tears, feeling moved, stereotype content model, kama muta

Warm and Touching Tears

Tearful Individuals are Perceived as Warmer Because We Assume They Feel Moved and Touched

What is the function of emotional tears? This riddle has fascinated scholars for several decades. While Darwin (1872) famously, and surprisingly, attached no purposeful function to emotional tears, recent conceptualizations have contradicted him, proposing intra- and inter-individual functions of tears (e.g., Gračanin, Bylsma, & Vingerhoets, 2017). Researchers have proposed that tearful individuals convey certain impressions: They are perceived as warmer and people are more likely to help and approach them. On the other hand, they might also be perceived as less competent. A recent study by Van de Ven, Meijs, and Vingerhoets (2017; hereafter *VMV*) tested such inferences from emotional tears and found exactly that pattern. These researchers argued that perceived sadness mediated this, but could not find evidence for this proposition.

Emotional tears have not only been linked to negative emotions such as sadness but increasingly to positive events or emotions (Gračanin et al., 2017; Vingerhoets & Bylsma, 2015), especially *feeling moved*¹ (Gračanin et al., 2017). Experiencing this emotion is linked to feelings of *warmth*, literally and metaphorically (Schubert, Zickfeld, Seibt, & Fiske, 2016; Seibt, Schubert, Zickfeld, & Fiske, 2017).

In the current study, we present a pre-registered extension of VMV. Our main focus is on replicating earlier findings, but we also investigate the role of *feeling moved* in the social function of tears. We do this using the *kama muta* framework of *feeling moved* states (A. P. Fiske, Seibt, & Schubert, 2017).

The inter-individual function of tears.

The current literature on crying discusses two major functions of tears (Gračanin et al., 2017; Vingerhoets & Bylsma, 2015). First, the intra-individual view focuses on catharsis and emotional recovery. Second, the inter-individual function is argued to signal the need for support and directing attention to the crier.

A number of recent studies have tested the inter-individual function of tears (VMV; Vingerhoets, Van de Ven, & Van der Velden, 2016). Vingerhoets and colleagues (2016) showed pictures of individuals displaying either tears and moist eyes or the same picture with the visible tears digitally removed to US and Dutch participants. These participants indicated

¹ *Feeling moved* has been often been assessed by asking individuals how *moved* and *touched* they feel (e.g., Seibt et al., 2017) and we do it likewise in the present studies. Therefore, we use *feeling moved* when referring to the overall concept, but *feeling moved and touched* when referring to our measurement.

higher intentions of approaching and helping the depicted individual when tears were present. This effect was found to be mediated by perceived helplessness and feeling connected to the depicted individual.

The difference in helping intentions was replicated in a recent study by VMV. In addition, based on the stereotype content model (S. T. Fiske, Cuddy, Glick, & Xu, 2002), it was hypothesized that tearful individuals would be perceived as warmer, but also less competent. The authors found the predicted pattern across three studies. In Study 1, Dutch participants judged ten individuals using a within design, thereby displaying tearful and non-tearful individuals. The second study used a between design showing either one male or female, expressing or not expressing tears, to US MTurk participants. Finally, Study 3 sampled Dutch participants and presented only one picture of a woman in a between design.

In Study 2, participants were not only asked how they judged the depicted individuals with and without tears, but also what emotions they thought were expressed. The study included an item on how sad the depicted individuals looked, and the authors tested whether this rating mediated the warmth and competency effect. Results showed that it did so partially for competence, but not for perceived warmth of the target. Tearful individuals were rated as sadder on average, which in turn reduced the perceived competence ratings, but did not increase the perceived warmth ratings.

The authors discussed the possibility that most of the pictures used did not depict individuals that were actually feeling sad. Instead, they might have been perceived as being in a positive state rather than in a negative state. One of such positive emotions that has been linked to tears is the state of *feeling moved* (Gračanin et al., 2017; VMV). In fact, the pictures used in these two studies depict visitors to Marina Abramović' performance art piece "The Artist Is Present," which reportedly moved many of its visitors to tears (Bradshaw, 2012).

Feeling moved

In recent years a number of theories have been put forward to conceptualize the emotion of *feeling moved* (Cova & Deonna, 2014; Haidt, 2003; Menninghaus et al., 2015). Typically, these models are based on the usage of the vernacular emotion label, trying to explain what type of emotional episodes people label as "moving or touching" (except Haidt, 2003).

Our own framework, *kama muta* theory, takes a different approach. We conceptualize this emotion as having a social-relational function (A. P. Fiske et al., 2017) and clearly identifiable appraisals and physiological correlates and motivations, but as being under-recognized and ambiguously labelled in many languages. Because labels of this state are

unspecific and differ across languages (cf. A. P. Fiske et al., 2017), we have introduced the concept *kama muta*, which is Sanskrit for *moved by love*, to refer to the underlying emotion.

Kama muta is argued to be generally positive and to occur when communal relationships suddenly intensify, such as experiencing (or observing) a reunification with a lost friend or getting married. Kama muta creates motivations to engage in communal behaviour, and is often labelled by metaphors of touch, warmth or movement in various languages. Experiences of kama muta (or feeling moved) are often accompanied by the physical sensations of warmth, chills or piloerection, and notably, tears (e.g., Schubert et al., 2016; Wassiliwizky, Jacobsen, Heinrich, Schneiderbauer, & Menninghaus, 2017). Self-report studies have shown a strong link between kama muta and tears, also across different cultural contexts (Schubert et al., 2016; Seibt, Schubert, Zickfeld, Zhu, et al., 2017; Seibt, Schubert, Zickfeld, & Fiske, 2017). Still, this work has focused on how intra-individual process of causes, consequences, and correlates of the emotion, rather than connecting its perception by observers.

It seems that people often cry because of feeling kama muta (Gračanin et al., 2017; Schubert et al., 2016) and observers might be more or less aware of the fact that tears do not solely reflect sadness or negative affect. Consequently, observing tears in somebody else may cause attributions of *feeling moved* and *touched*, which should lead to judgments of warmth due to its link to communal sharing, which is often expressed in terms of social warmth (IJzerman et al., 2015; see also Van Kleef, 2009, for a related more general account on how emotions might influence perception and behavior).

The present study

The current study is primarily revisiting earlier findings on the inter-individual functions of emotional tears and additionally explores the role of feeling moved or kama muta in the perception of such tears. We pre-registered a study protocol (<https://osf.io/etwrm/>) using the material and methods of two earlier studies (VMV; Vingerhoets et al., 2016) while adding new items in order to capture perceived feeling moved and implementing a different study design. We recruited two samples, US Americans via MTurk and Norwegians via social media, in order to assure cross-country validity. Our primary hypotheses were that 1) tearful individuals would be perceived as warmer, but less competent in contrast to non-tearful ones, 2) individuals would report higher intentions to approach and help, but simultaneously lower intentions to work with tearful individuals in contrast to non-tearful ones. In addition, we added a new hypothesis based on kama muta theory arguing that 3) perceiving individuals as feeling moved would mediate the effect of

tears on perceiving them as warm while perceiving them as sad would not.² The final study plan including material, methods and analysis plan was reviewed by and discussed with the original authors. We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study (Simmons, Nelson, & Simonsohn, 2012). The studies were approved by the institutional review board of the University of Oslo, and all participants were provided with informed consent.

Method

Participants. In total 360 US participants were sampled on Amazon MTurk and 218 Norwegian participants through snowball sampling on social media. Exclusions were based on participants indicating a different nationality than the two focal ones or indicating more than 50% missing responses. The final sample consisted of 561 participants (350 US, 211 Norwegian) ranging from 18 to 76 years of age (US: $M_{\text{age}} = 37.87$, $SD_{\text{age}} = 12.20$; Norway: $M_{\text{age}} = 40.04$, $SD_{\text{age}} = 11.87$). The US sample consisted of 149 females and 198 males (3 *other* or missing) and the Norwegian sample consisted of 142 females and 64 males (5 *other* or missing). For the Norwegian sample, the questionnaire was translated into Norwegian based on discussion with individuals fluent in both Norwegian and English.

The lowest effect size reported by VMV was a Cohen's d of .32 (Study 2). Based on a two-sided t-test with $\alpha = .05$, $\text{power} = .95$ and $d = .32$, G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) suggested a total sample size of 510. Because in our study participants were rating more than one stimulus, we expected a lower required sample size. However, power calculations for multilevel models are not straightforward. We therefore opted for a total sample size of 350, resulting in 1050 ratings (175 x 6) per condition. See the pre-registration document for a more detailed reflection on the power analysis.

Materials and Procedure. We generally followed the same procedure and utilized the same materials as VMV, but added some measures to test our additional hypotheses. We used all 20 stimuli from Vingerhoets et al. (2016) depicting the portrait of 8 males and 12 females having moist eyes or showing visible tears (Anelli, 2012). Each picture was digitally altered by removing the visible tears. Hence, our total set of stimuli included 20 individuals exhibiting visible tears and 20 pictures of the same picture with the tears digitally removed. We employed a 2 (between: tears vs. no tears) x 2 (within: gender of target) x 3 (within: type of picture) mixed design, with participants being randomly allocated to watching only

² Additionally, we had a fourth unconfirmed hypothesis as part of a graduate course that we pre-registered. This moderation hypothesis argued that trait empathic concern, the disposition to feel compassion for other's in need, would moderate the link between the experimental condition and judged feeling moved and also the link between judged sadness and judged competence. Results can be found in the Supplementary Material.

pictures of individuals with tears (US: $n = 175$; NO: $n = 108$) or with tears digitally removed (US: $n = 175$; NO: $n = 103$). Note that the crucial manipulation was thus implemented *between* participants. Participants were always presented with three male and three female pictures that were randomly drawn from the total pool of 20 pictures.

For all of the six pictures, participants completed the same measures, as follows. Participants judged warmth and competence on 7-point scales anchored with *not at all* and *very much so*. Warmth was assessed with *warm, nice, friendly, and sincere*. Competence was measured with *competent, self-assured, skilled, and capable*. Total mean competence (US $\alpha = .92$; NO $\alpha = .92$) and warmth (US $\alpha = .95$; NO $\alpha = .93$) scores were calculated by averaging the respective four items.

Afterwards, participants indicated how *sad* they perceived the target to be, following VMV. We added an item assessing perceived kama muta by asking how *touched and moved* the person was judged to be.³ Both items used the same 7-point scale as above. Then followed a list of the emotion labels *anger, joy, pride, no emotion/neutral, disgust, fear, surprise*, and a field called *other* where participants could write additional terms in a text box. Each emotion label used a dichotomous format indicating whether the person was perceived to feel that emotion or not.

Participants were then asked to complete two items on intention to help and work with the target, again on a 7-point scale. The help item was: “If you would arrive at work and meet this person, would you talk to the person to find out whether there was something you could do for them?”⁴ The work item was: “If you would arrive at work, and your manager asks you to finish an important project that afternoon, would you like to do that with this person?”.

In the end, we also included additional measures for exploratory purposes that are described in the Supplementary Material. After completing demographic information participants were thanked and debriefed.

Results

Because each participant rated six stimuli, our data have a multilevel structure, and we employed linear mixed models using the *lme4* package in R. We always included participant and target picture as random factors and randomly varied intercepts accordingly

³ Norwegian participants were only presented with *rørt*, which is best translated as *touched*. The literal translation of *moved*, Norwegian *beveget*, can be used in the same metaphoric sense, but sounds old-fashioned to most contemporary speakers.

⁴ We realized too late that this formulation is not grammatically correct.

(Judd, Westfall, & Kenny, 2012).⁵ Analyses are presented separately for the US and Norwegian sample, but results did only differ minimally. We present and interpret unstandardized effect sizes B and their 95% confidence intervals in the text – those thus refer to the scales introduced above. In addition, we present an overview of descriptive statistics in Table 1 and standardized effect sizes, as well as inferential tests for all models in Table 2. As pre-registered we set our alpha level to .05 for all analyses.

Perceived warmth and competence. Two linear mixed models were run regressing perceived warmth and competence score on the condition (tears), the gender of the target, and their interaction (H1). For the US sample, perceived warmth was rated $B=.56$ [.36, .77], or about half a scale point, higher for individuals with visible tears. Female targets were also rated as warmer, $B=.49$ [.12, .86]. In the Norwegian sample, perceived warmth was also $B=.39$ [.13, .65] scale points increased for targets showing tears, and there was a small increase for female targets, $B=.14$ [-.12, .40], which was not statistically significant (Table 2).

The competence score did not show a substantial increase or decrease, neither in the US sample by condition, $B=-.01$ [-.21, .18], or target gender, $B=.03$ [-.31, .37], nor in the Norwegian sample by condition, $B=-.04$ [-.30, .22]. In the Norwegian sample target gender showed a small increase, $B=.17$ [-.08, .41], which was not statistically significant (Table 2).

Intention to help and work with. Two linear mixed models were performed regressing the help and work ratings on tear condition, target gender, and their interaction (H2). In the US sample, individuals with tears received a higher rating than individuals without tears, $B=.97$ [.67, 1.26]. Similarly, women received higher help intentions than males by $B=.55$ [.27, .84] scale points. This finding was partially replicated in the Norwegian sample, which also showed an increase similar in magnitude for tearful individuals by $B=1.03$ [.66, 1.40]. However, the effect for target gender was smaller and not statistically significant, $B=.18$ [-.08, .45] (Table 2).

In the US sample, participants also expressed more intentions to work with tearful individuals, $B=.45$ [.17, .72]. Likewise, such intentions were higher when the target was a woman, $B=.47$ [.06, .88]. For the Norwegian sample we observed a similar, though smaller, increase in ratings for tearful individuals $B=.30$ [-.003, .60]. The effect for target gender was again smaller and not statistically significant, $B=.17$ [-.10, .44] (Table 2). For all four models across both countries the interaction between condition and gender did not show statistically significant effects (Table 2).

⁵ We also repeated all models with randomly varying slopes; results were nearly identical.

Mediation by feeling moved. For the mediation hypothesis, we estimated three linear mixed models. First, we regressed the mediator on the independent variable (estimating path a). Then, we regressed the dependent variable on the mediator and the independent variable (estimating path b and c'). Finally, we regressed the dependent variable on the independent variable for obtaining the direct effect (path c). For the indirect effect, we employed a Monte Carlo simulation in order to derive a confidence interval (Falk & Biesanz, 2016). We present unstandardized *B*s; all measured variables used the same 7-point scale. Inferential tests and standardized coefficients are presented in Table 2.

The first mediation model investigated the effect of tear condition (0: no tears, 1: tears) on warmth (DV) as mediated by perceived feeling moved. Because tear condition indicated no interaction with the gender of the target in the previous analyses, we did not take the gender of the target as a moderator into account. In the US sample, the direct effect of tear condition on warmth was significant, $B=.52$ [.33, .70], which was replicated in the Norwegian sample, $B=.41$ [.18, .65]. In both samples participants perceived the targets as about half a scale point warmer when they showed tears. When adding perceived feeling moved as a mediator, this effect (c') was considerably smaller in strength in both the US, $B=.08$ [-.10, .24], and Norwegian, $B=.08$ [-.14, .31], sample. The indirect effect showed a stable effect in both the US, $B=.44$ [.34, .55], and the Norwegian study, $B=.33$ [.23, .44]. Tears increased ratings of perceived feeling moved and touched (a) by about one scale point in both the US, $B=1.28$ [1.05, 1.50], and Norwegian sample, $B=1.12$ [.85, 1.38]. Perceived feeling moved and touched also increased ratings of perceived warmth (b) in the US, $B=.35$ [.32, .38], and Norwegian sample, $B=.30$ [.26, .34] (see Figure 1 for full model overview).

Perceived sadness and perceived feeling moved correlated positively with $r=.37$ (US) and $r=.20$ (Norway). We subsequently repeated the same mediation model with perceived sadness as investigated by Van de Ven et al. (2017). The indirect effect of perceived sadness was particularly small and negative in the US, $B=-.04$ [-.08, -.01], while slightly positive, but still small in the Norwegian study, $B=.03$ [.001, .07]. Both effects are comparably small as in the reference study by Van de Ven et al. (2017). Tear condition still had an effect when adding the mediator in both samples (see Figure 1 for the full model overview).⁶

Discussion

⁶ Finally, we also estimated a mediation model including both feeling moved and sadness as simultaneous mediators. In both samples, feeling moved indicated a meaningful positive indirect effect, while sadness showed a much smaller effect (see Supplementary Figure 1).

The current study consisted of an extension of findings on inter-individual functions of emotional tears by VMV. We extended the reference study by testing effects and functions of perceiving the tearful individual as moved or touched and employing a different design.

We replicated the central findings that tearful individuals were perceived as warmer, and more likely to be helped and approached, in both new samples. Considering previous findings these seem to be stable and replicable effects of meaningful size (with effect sizes around a Cohen's d of .50-.70; see Supplementary Figure 2 & 3). While the helping effects showed similar effect sizes, our findings for the warmth effect were weaker than previous findings: VMV reported d s ranging from .65 to .95, while our effects were .39 and .29, respectively. Our increased number of stimuli might explain the reduction, but this cannot explain why the helping effect was observed in comparable strength. Another possible explanation is that the general motivation is more stable and less susceptible to stimuli variation than the judgment and attribution of a personality dimension such as warmth.

In contrast, we found tiny effect sizes for the effect on competence in both of our samples. This effect was not particularly strong in the reference study (d s from .32 to .60); tearful individuals were not perceived as less competent than non-tearful ones in our samples. We can think of three explanations. First, although our studies included a strong mixed design and many observations, we did not plan power for it, and it might be lacking. In any case, the effect is most likely small. Second, our extended replication included an item targeting attributed feeling moved. It is possible that this item influenced participants by offering them an alternative (and obviously meaningful) attribution, and led participants to assume a smaller or no reduction in competence because this emotion suggests a high degree of emotional authenticity (Zawadzki, Warner, & Shields, 2013). Third, we included a higher number of stimuli in our design (20) and thereby introduced more variation. In the reference study only one (Study 2 and 3) or ten pictures (Study 1) were presented. It is possible that the low number of stimuli included pictures that were coincidentally more fitting for a competence effect.

Similarly, we did not replicate the associated reference effect on intentions to work jointly, as found by VMV. Participants did not indicate less willingness to work with tearful individuals in contrast to non-tearful ones. In fact, we observed a small effect in the opposite direction in the US sample, which was a bit weaker in the Norwegian sample. Attributed emotional authenticity might again be a reason.

Touching Tears

Confirming the third hypothesis, judging someone as touched and moved fully mediated the relationship between our seeing tears and ratings of perceived warmth. Tearful individuals were perceived as more moved and touched, which in turn led to higher ratings of warmth. Experiencing feeling moved often includes sensations such as weeping or moist eyes (Schubert et al., 2016). Seeing someone in tears might be a proxy for judging someone as feeling touched and moved, or, in our terms, as experiencing *kama muta*. In addition, the present findings suggest that such individuals are also regarded as warm. This judgment might be one factor why individuals are often motivated to act communally after seeing someone getting moved (VMV).

Cross-country findings

Our results were in general identical in both samples. However, Norwegian participants showed smaller effects of target gender. Ratings for warmth, competence, help, and work did not differ between female and male targets, while this often was the case in the US sample and in the reference studies, which used Dutch and US samples (VMV). One possible explanation might be that gender equality is typically higher in Norway, thereby reducing perceived or expressed differences between the sexes (cf. Fischer, Rodriguez Mosquera, Van Vianen, & Manstead, 2004). Although we cannot draw any valid conclusions about cultural differences based on sampling two countries, our and previous studies suggest similar effects at least for WEIRD cultures.

Limitations

Participants rated tearful individuals in the present study not only as more touched and moved but also as sadder – but that had no appreciable mediating effect. Both feelings might sometimes co-occur, but often they do not (Schubert et al., 2016). One feature of the present design that might be seen as a shortcoming is that participants did not receive any background information *why* the depicted individuals started weeping (copying the reference studies). In reality, we often do have that information about others. Individuals may cry because of many reasons, both positive and negative (Vingerhoets & Bylsma, 2015). It seems plausible that tearful individuals are perceived as expressing more positive emotions, such as feeling moved and touched, after a positive situation (e.g., reuniting with a friend), while the opposite would be true for negative situations (e.g., parting with a friend; cf. Hendriks, Croon, & Vingerhoets, 2008). We can thus interpret the current findings as showing a kind of baseline effect of tears in the absence of a strong context suggesting either positive or negative causes. On the other hand, the expression on the face, in particular concurrent

display of smiling or sadness, always provides some context. The source of our stimuli were photos of individuals who were presumably more moved than sad: They did not include extreme facial expressions of sadness (i.e., despair). The kama muta model argues that tearing up and weeping without feeling (and presumably displaying) despair serves as an affiliative signal in response to increased communal sharing. The current data show that such signals are indeed recognized and interpreted in line with this function.

References

- Anelli, M. (2012). *Portraits in the presence of Marina Abramovic*. Bologna, Italy: Damiani.
- Bowman, N. A. (2012). Effect Sizes and Statistical Methods for Meta-Analysis in Higher Education. *Research in Higher Education, 53*(3), 375–382.
<https://doi.org/10.1007/s11162-011-9232-5>
- Bradshaw, P. (2012, July 5). Marina Abramović: The Artist Is Present – review. *The Guardian*. Retrieved from <https://www.theguardian.com/film/2012/jul/05/marina-abramovic-artist-present-review>
- Cova, F., & Deonna, J. A. (2014). Being moved. *Philosophical Studies, 169*(3), 447–466.
<https://doi.org/10.1007/s11098-013-0192-9>
- Darwin, C. (1872). *The expression of the emotions in man and animals*. London, UK: John Murray.
- Falk, C. F., & Biesanz, J. C. (2016). Two cross-platform programs for inferences and interval estimation about indirect effects in mediational models. *SAGE Open, 6*(1), 2158244015625445.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191.
- Fischer, A. H., Rodriguez Mosquera, P. M., Van Vianen, A. E., & Manstead, A. S. R. (2004). Gender and Culture Differences in Emotion. *Emotion, 4*(1), 87–94.
<https://doi.org/10.1037/1528-3542.4.1.87>
- Fiske, A. P., Seibt, B., & Schubert, T. W. (2017). The sudden devotion emotion: Kama muta and the cultural practices whose function is to evoke it. *Emotion Review*.
- Fiske, S. T., Cuddy, A. J., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology, 82*(6), 878.

- Gračanin, A., Bylsma, L. M., & Vingerhoets, A. J. J. M. (2017). The Communicative and Social Functions of Human Crying. In J.-M. Fernández-Dols & J. A. Russell (Eds.), *The Science of Facial Expression* (pp. 217–233). New York, NY, US: Oxford University Press.
- Haidt, J. (2003). Elevation and the positive psychology of morality. In C. L. M. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 278–289). Washington DC, US: American Psychological Association. Retrieved from <http://drdavidlawrence.com/wp-content/uploads/2015/12/Flourishing-Positive-psychology-and-the-life-well-lived.pdf#page=252>
- Hendriks, M. C. P., Croon, M. A., & Vingerhoets, A. J. J. M. (2008). Social Reactions to Adult Crying: The Help-Soliciting Function of Tears. *The Journal of Social Psychology, 148*(1), 22–42. <https://doi.org/10.3200/SOCP.148.1.22-42>
- IJzerman, H., Coan, J. A., Wagemans, F. M., Missler, M. A., van Beest, I., Lindenberg, S., & Tops, M. (2015). A theory of social thermoregulation in human primates. *Frontiers in Psychology, 6*. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4404741/>
- Judd, C. M., Westfall, J., & Kenny, D. A. (2012). Treating stimuli as a random factor in social psychology: A new and comprehensive solution to a pervasive but largely ignored problem. *Journal of Personality and Social Psychology, 103*(1), 54–69. <https://doi.org/10.1037/a0028347>
- Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. *Frontiers in Psychology, 4*. <https://doi.org/10.3389/fpsyg.2013.00863>

- Menninghaus, W., Wagner, V., Hanich, J., Wassiliwizky, E., Kuehnast, M., & Jacobsen, T. (2015). Towards a psychological construct of being moved. *PloS One*, *10*(6), e0128451.
- Schubert, T. W., Zickfeld, J. H., Seibt, B., & Fiske, A. P. (2016). Moment-to-Moment Changes in Being Moved Match Changes in Perceived Closeness, Weeping, Goosebumps, and Warmth: Time Series Analyses. *Cognition and Emotion*.
<https://doi.org/https://doi.org/10.1080/02699931.2016.1268998>
- Seibt, B., Schubert, T. W., Zickfeld, J. H., & Fiske, A. P. (2017). Interpersonal closeness and morality predict feelings of being moved. *Emotion*, *17*(3), 389–394.
<https://doi.org/10.1037/emo0000271>
- Seibt, B., Schubert, T. W., Zickfeld, J. H., Zhu, L., Arriaga, P., Simão, C., ... Fiske, A. P. (2017). Kama Muta: Similar emotional responses to touching videos across the US, Norway, China, Israel, and Portugal. *Journal of Cross-Cultural Psychology*.
<https://doi.org/10.1177/0022022117746240>
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2012). A 21 word solution. *Available at SSRN 2160588*. Retrieved from
http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2160588
- Van de Ven, N., Meijs, M. H. J., & Vingerhoets, A. (2017). What emotional tears convey: Tearful individuals are seen as warmer, but also as less competent. *British Journal of Social Psychology*, *56*(1), 146–160. <https://doi.org/10.1111/bjso.12162>
- Van Kleef, G. A. (2009). How emotions regulate social life: The emotions as social information (EASI) model. *Current Directions in Psychological Science*, *18*(3), 184–188.
- Vingerhoets, A. J. J. M., & Bylsma, L. M. (2015). The Riddle of Human Emotional Crying: A Challenge for Emotion Researchers. *Emotion Review*, 1754073915586226.

Vingerhoets, A. J. J. M., Van de Ven, N., & Van der Velden, Y. (2016). The social impact of emotional tears. *Motivation and Emotion*, *40*(3), 455–463.

<https://doi.org/10.1007/s11031-016-9543-0>

Wassiliwizky, E., Jacobsen, T., Heinrich, J., Schneiderbauer, M., & Menninghaus, W. (2017). Tears Falling on Goosebumps: Co-occurrence of Emotional Lacrimation and Emotional Piloerection Indicates a Psychophysiological Climax in Emotional Arousal. *Frontiers in Psychology*, *8*. <https://doi.org/10.3389/fpsyg.2017.00041>

Zawadzki, M. J., Warner, L. R., & Shields, S. A. (2013). Sadness Is Believed to Signal Competence When Displayed With Passionate Restraint. *Social Psychology*, *44*(3), 219–230. <https://doi.org/10.1027/1864-9335/a000106>

Author Note

We are very thankful to Niels van de Ven and Ad Vingerhoets for their help and extensive feedback on our plans, preregistration and final manuscript. We also thank the students of our *Prosjekt – sosialpsykologi* course in Spring 2017 for their excellent work in designing and collecting the Norwegian study. Finally, we are grateful to Marco Anelli for allowing us to use his photographs. The pre-registration of the present studies including all materials, measures and data files is available online (<https://osf.io/etwrm/>).

Author contributions

All authors conceived, designed, and conducted the studies. JZ conducted the statistical analyses and wrote the first draft. All authors revised the final manuscript.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Funding

This research was supported by funding from the University of Oslo.

Tables

Table 1. Means and standard deviations for the main measures for each sample and each condition separately. Means and standard deviations are also presented for female and male targets respectively.

Variable	US		NO	
	No Tears (n = 1057 - 1068)	Tears (n = 1045 - 1055)	No Tears (n = 605 - 619)	Tears (n = 637 - 641)
	<i>M (SD)</i>			
Perceived Warmth	4.05 (1.44)	4.63 (1.42)	4.15 (1.34)	4.55 (1.34)
Female	4.31 (1.42)	4.83 (1.40)	4.22 (1.34)	4.65 (1.34)
Male	3.78 (1.41)	4.43 (1.42)	4.08 (1.34)	4.45 (1.32)
Perceived Competence	4.35 (1.26)	4.34 (1.31)	4.29 (1.22)	4.17 (1.29)
Female	4.34 (1.29)	4.34 (1.31)	4.37 (1.25)	4.18 (1.31)
Male	4.37 (1.23)	4.34 (1.31)	4.21 (1.18)	4.17 (1.26)
Want to approach	3.93 (1.86)	4.83 (1.89)	4.13 (1.80)	5.20 (1.74)
Female	4.23 (1.83)	5.08 (1.83)	4.21 (1.78)	5.29 (1.69)
Male	3.64 (1.83)	4.58 (1.92)	4.04 (1.82)	5.11 (1.78)
Want to work with	3.73 (1.73)	4.00 (1.84)	4.19 (1.58)	4.42 (1.55)
Female	3.96 (1.76)	4.15 (1.84)	4.28 (1.61)	4.44 (1.55)
Male	3.51 (1.67)	3.85 (1.83)	4.10 (1.55)	4.40 (1.54)
Perceived Sadness	3.45 (1.89)	4.76 (1.77)	3.74 (1.71)	4.43 (1.74)
Female	3.86 (1.95)	5.00 (1.76)	3.83 (1.71)	4.55 (1.79)
Male	3.05 (1.73)	4.53 (1.76)	3.65 (1.70)	4.32 (1.69)
Perceived Feeling Moved and Touched	3.44 (1.79)	4.74 (1.82)	3.28 (1.58)	4.40 (1.89)
Female	3.76 (1.77)	4.92 (1.73)	3.38 (1.54)	4.37 (1.96)
Male	3.12 (1.75)	4.56 (1.88)	3.18 (1.60)	4.43 (1.81)

Note. Final sample sizes vary across the mentioned numbers in parentheses.

Table 2. Inferential statistics for the four main and the two mediation models. Results for the US and Norwegian sample are presented separately.

Predictor	US			NO		
	d_s	t (df)	p	d_s	t (df)	p
Mixed Model Perceived Warmth						
Tears	0.39	5.32 (657)	<.001	0.29	2.93 (357)	.004
Target Gender	0.34	2.60 (20)	.02	0.11	1.07 (31)	.29
Interaction	-0.06	-0.89 (1769)	.37	0.04	0.40 (1029)	.69
Mixed Model Perceived Competence						
Tears	-0.01	-0.12 (618)	.91	-0.03	-0.33 (321)	.75
Target Gender	0.02	0.15 (20)	.89	0.12	1.32 (25)	.20
Interaction	-0.01	-0.13 (1767)	.90	-0.06	-1.52 (1022)	.13
Mixed Model Want to approach						
Tears	0.70	6.38 (596)	<.001	0.82	5.47 (322)	<.001
Target Gender	0.39	3.86 (25)	<.001	0.14	1.38 (34)	.18
Interaction	-.03	-0.42 (1771)	.68	0.001	0.02 (1037)	.99
Mixed Model Want to work with						
Tears	0.31	3.22 (620)	.001	0.22	1.94 (370)	.05
Target Gender	0.33	2.23 (20)	.04	0.12	1.23 (35)	.23
Interaction	-0.12	-1.40 (1769)	.16	-0.10	-0.95 (1040)	.34
Feeling Moved Mediation						
Path c (y -> x)	0.36	5.56 (401)	<.001	0.31	3.53 (222)	<.001
Path a (m -> x)	0.71	10.92 (396)	<.001	0.64	8.30 (217)	<.001
Path b (y -> m,x)	0.45*	23.23 (2094)	<.001	0.40*	15.57 (1207)	<.001
Path c' (y -> x,m)	0.05	0.92 (433)	.36	0.06	0.73 (238)	.47
Sadness Mediation						
Path c (y -> x)	0.36	5.56 (401)	<.001	0.31	3.53 (222)	<.001
Path a (m -> x)	0.70	13.47 (383)	<.001	0.40	5.68 (215)	<.001
Path b (y -> m,x)	-0.05*	-2.20 (2022)	.03	0.05*	2.02 (1199)	.04
Path c' (y -> x,m)	0.39	5.81 (435)	<.001	0.29	3.29 (227)	.001

Note. Cohen's d_s is calculated by converting the unstandardized effect size B into r (Bowman, 2012). The obtained r is then converted to a Cohen's d_s using a formula based on Lakens (2013). *numbers with asterisks are correlation coefficients, r , instead of Cohen's d_s .

Figures

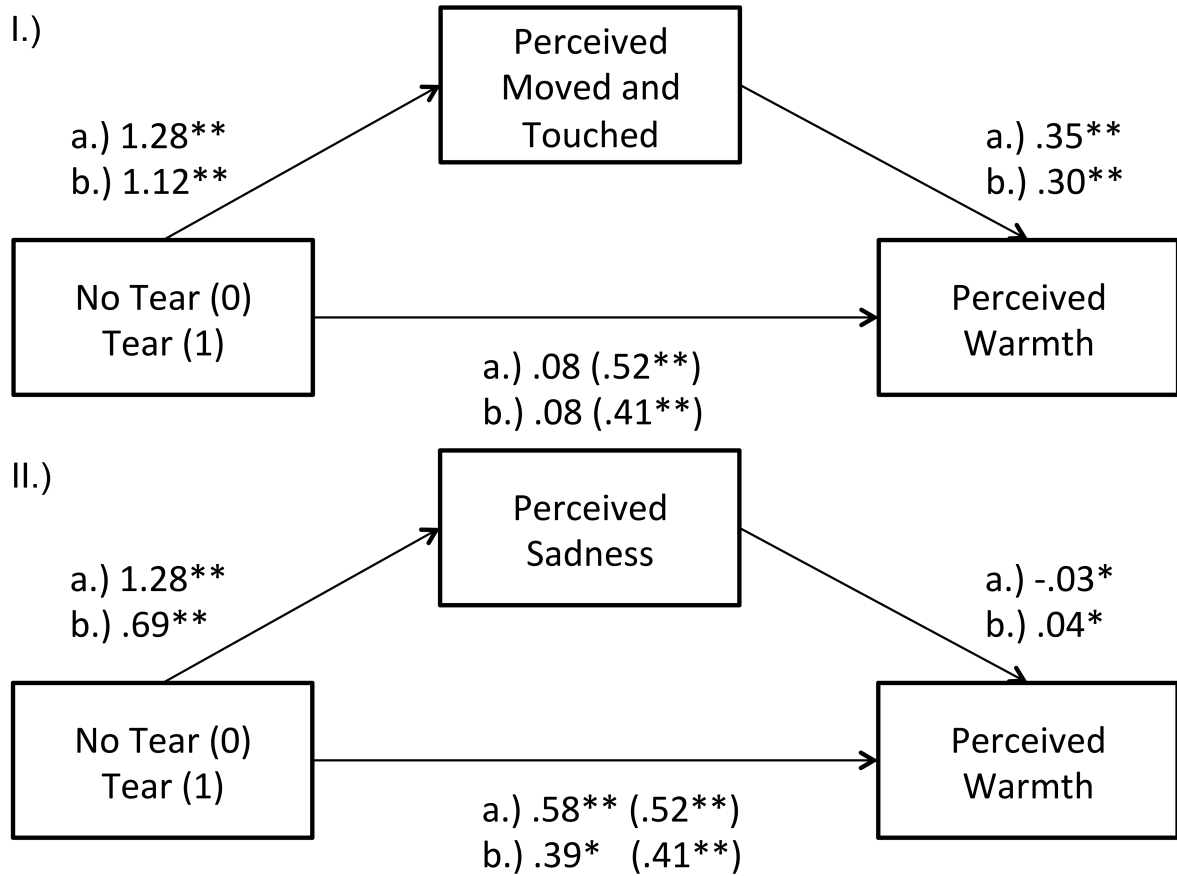


Figure 1. Mediation analysis of the presence or absence of a tear on attributed warmth for the US (a) and Norwegian (b) sample. Perceived moved and touched (I.) or perceived sadness (II.) are employed as mediators. Note. Numbers reflect unstandardized regression weights. Effect of the tear manipulation on perceived warmth within parentheses is the direct effect, and without parentheses is the effect when controlling for perceived moved and touched (I.) or perceived sadness (II.). * $p < .05$, ** $p < .001$.