Tears Trigger the Intention to Offer Social Support

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Tears Trigger the Intention to Offer Social Support: A Systematic Investigation of the Interpersonal Effects of Emotional Crying Across 36 Countries

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TEARS TRIGGER SOCIAL SUPPORT INTENTIONS

Abstract

Tearful crying is a ubiquitous and mainly human phenomenon. The persistence of this behavior throughout adulthood has fascinated and puzzled many researchers. Scholars have argued that emotional tears serve an attachment function: Tears are thought to act as a *social glue* that binds individuals together and triggers social support intentions. Initial experimental studies supported this proposition across several methodologies, but these were typically conducted only across Western participants, resulting in limited generalizability. The present study examines this effect across 36 countries spanning all populated continents, providing the most comprehensive investigation of the social effects of tearful crying to-date. Next to testing possible mediating factors, we also examine a number of moderating factors, including the crier's gender and group membership, the situational valence (positive or negative situations), the social context (in private or public settings), the perceived appropriateness of crying, and trait empathy of the observer. The current work can inform theories on crying across the social sciences.

Keywords: emotional crying, emotional tears, attachment, cross-cultural, social support

150/250

Tears Trigger the Intention to Offer Social Support: A Systematic Investigation of the

Interpersonal Effects of Emotional Crying Across 36 Countries

C'est tellement mystérieux, le pays des larmes

[*It's so mysterious, the land of tears*]

Antoine de Saint-Exupéry – The Little Prince

It was a common belief in Ancient Greece that weeping together creates a bond between people. Similarly, scholars have argued that emotional tears played a significant role in the evolution of humankind's solidarity and affiliation (Walter, 2006) and that crying fosters approach and support behavior in others (see Gračanin, Bylsma, & Vingerhoets, 2018, for a review). Recent empirical investigations have indeed yielded suggestive evidence that emotional tears increase affiliative intentions in observers (see Supplementary Table 1.1.1 for a non-systematic meta-analysis of the literature), fitting the hypothesis that emotional tears act as a *social glue* and facilitate attachment throughout the lifespan (Bowlby, 1982; Nelson, 2005; Radcliffe-Brown, 1922; Zeifman, 2012). While culture may shape social behavior and perceptions differently, few attempts have investigated to what extent reactions to emotional tears vary across different cultures or contexts and how homogenous such effects might be (as is the case in most studies in psychology; Henrich, Heine, & Norenzayan, 2010; Rad, Martingano, & Ginges, 2018). The question is whether the signaling function of tears is more like that of yawning, a fairly universal and contagious expression argued to constitute an evolutionary basis of empathy (Provine, 2005), or more like that of smiling, a heavily context-dependent expression that can for example signal competence in some but low intelligence in other cultures (Krys et al., 2016). In the current project, we provide a comprehensive test of whether emotional tears increase self-reported support intentions[1] in observers, how this mechanism operates, and whether specific aspects, including gender and ethnicity of the crier, social context, or situational valence, promote or mitigate such an effect.

We introduce the *social-support* hypothesis, stating that emotional crying constitutes a fairly universal social signal that promotes social bonding and support intentions[2] in others.

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[1] With self-reported intentions we refer to what has been termed as *willingness* or *motivation* in previous studies – a subjective representation of how one intends to behave in response to a hypothetical scenario including an unknown individual. Others might call this social scripts, which would align with our definition.

[2] Social support has been typically divided into *emotional*, *instrumental*, and *informational* support (Wills, 1991). In the current project, we are primarily interested in emotional support as this is the most common response in situations of emotional crying and has been used in previous research (e.g., Hendriks & Vingerhoets, 2006).

Affiliative responses to emotional tears have major implications for the well-being of the crier (Hendriks et al., 2008) and for the establishment of social bonds (Walter, 2006). If the social-support hypothesis is correct, cultural differences in the strength of the effect are possible, but the effect itself should show relatively low heterogeneity across sampling locations, while also being largely independent of the characteristics of the target or the participant (such as gender or group identification). Through this project, we aim to provide significant new insights into the riddle of human emotional tears. Understanding why tears function the way they do is of vital interest to caregiver-infant relationships (i.e., developmental psychology), how the function differs (or not) is of interest to studies of human culture (i.e., anthropology/cultural psychology), how crying is used as an affiliative cue is of interest to those studying both human (i.e., social psychology) and nonhuman animal relations (i.e., biology/behavioral ecology). In other words, the study of tears is vital across the human and biological sciences.

The Function of Human Emotional Tears

Several theoretical approaches have attempted to explain the occurrence of human emotional crying[3]. First, Kottler (1996) emphasized the *interpersonal* effect of tears, as they constitute a request for help from other individuals. Similarly, Murube et al. (1999) theorized that tears, beyond functioning as a request for help, also serve as a signal for offering help, for example in situations involving expressions of sympathy. Consistent with this, Provine, Krosnowski, and Brocato (2009) argued that emotional tears reliably signal sad feelings of the crier (see Cordaro, Keltner, Tshering, Wangchuk, & Flynn, 2016, for similar findings with regard to the acoustical attributes), and additional studies found that perceptions of sadness foster support behavior in others (Lench, Tibbett, & Bench, 2016). Interestingly, although mammals and certain bird species show distress vocalizations when being separated from a caregiver, humans seem to be unique when it comes to the production of emotional tears, which is maintained throughout the lifespan (Vingerhoets, 2013). Second, work on *intrapersonal* effects focuses on processes within the individual and regards emotional crying as a form of catharsis, that based on empirical evidence seems to depend primarily on the amount of social support received, the social situation, the mental health condition of the crier, and the reasons for crying (Bylsma, Vingerhoets & Rottenberg, 2008). In this project, we do not focus on the possible

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[3] From a medical viewpoint, researchers typically distinguish among *basal tears*, *reflex* or *irritant tears*, and *emotional tears* (Vingerhoets, 2013). Basal tears originate from small glands under the eyelid and produce a tear film, while irritant and emotional tears originate from the same lacrimal gland located above the eye. Given the nature of our approach (i.e., presenting tearful faces showing *emotional* tears), we will mainly focus on emotional tears in the present project.

intrapersonal effects, but rather on the first function of tears having an interpersonal effect: a possible signal function that triggers social support intentions in those who see someone cry.

Related to such signal functions, people quickly form impressions of others based on facial expressions (Willis & Todorov, 2006). Thus, recent research has started testing the effect of visual tears on person perception. For example, Balsters, Krahmer, Swerts, and Vingerhoets (2013) found that participants were faster to judge subliminally presented tearful faces as sad and in need of support than similar faces without tears. Furthermore, there is support for the idea that emotional crying serves an attachment function, showing that individuals report stronger intentions to emotionally support tearful or crying individuals than their non-tearful counterparts (see Supplementary Table 1.1.1 for an overview of the published literature). A non-systematic literature review that we conducted indicates that this effect is substantial ($d = .69$ [.47, .90]).[4] However, and most importantly for the general test of the social-support hypothesis, there is high heterogeneity in these effect sizes (as indicated by the wide confidence interval). Reported effects range from rather large and substantial (e.g., $d = 2.40$ [2.19, 2.60]; Hendriks & Vingerhoets, 2006) to small (e.g., $d = .35$ [.19, .51]; Küster, 2018). A possible reason for this is that a varied set of methodologies and operationalizations have been used across different studies (see Supplementary Material Figure 1.2.1). Since there is currently no standardized stimuli set, the stimuli used in different studies differ considerably in how tears appear and are perceived.

The first priority is to use a large and diverse set of stimuli (different faces) to reliably test the social-support hypothesis. An illustrative example was provided by a recent set of studies: Van de Ven et al. (2016) found that persons showing a tearful face were seen as less competent, while Zickfeld and Schubert (2018) found that they were not. It then turned out that the reduced set of stimuli that Van de Ven et al. had used was likely the main reason for the contradictory findings between these studies (Zickfeld et al., 2018). Similarly, the literature on crying reports other examples of contradictory findings (e.g., concerning the effect of gender of the crying person, as discussed later), but these might be limited to specific methods or context effects on why the target person is showing tears. Because context appears to play an important role in explaining such contradictory findings, the main goal of this investigation is to test the social-support hypothesis by conducting a comprehensive study that considers the potential role of various contextual factors of emotional crying, using a large set of stimuli, in samples across the world.

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[4] Note that we also included unpublished studies in our overview. Still, it is possible that this estimate is overestimated due to publication bias. However, conducting a trim-and-fill analysis on our data revealed no systematic indication of publication bias (see Supplementary Material 1.3).

Mediating Effects. In addition to the main effect of emotional tears eliciting self-reported support intentions in observers, the current study also focuses on possible mediating variables of this effect. Thus, the second important objective is to understand *why* tears lead to affiliative behavior.

Perceived Warmth, Helplessness, & Connectedness. Vingerhoets and colleagues (2016) found that the tendency to approach tearful individuals is caused by the inferred helplessness or sadness of the crier, the crier's perceived friendliness or warmth, and how connected one feels to the crier (see Stadel et al., 2019; for a recent replication). Perceived helplessness showed the strongest effect, while perceived friendliness had a somewhat lower impact. Other studies have supported these findings with some exceptions (see Supplementary Material Table 1.1.2 – 1.1.4 for an overview). A more systematic examination of the process is therefore warranted, especially as this can help to illustrate potential context effects. For example, if we were to find fewer support intentions toward out-group members who display tears, is this because observers perceive outgroup-members to be less in need of support compared to in-group members or do observers perceive the same level of need but are just less inclined to help despite realizing they are in need?

State Empathic Concern/Personal Distress. Next to more cognitive evaluations or perceptions of the tearful target, the emotional state of the *observer* might mediate potential social support intentions. Previous theories have repeatedly discussed the possibility that (altruistic) support is mediated by two distinct pathways (Batson et al., 1987): *empathic concern* or *personal distress*. Empathic concern refers to a compassionate feeling towards others in need, while personal distress refers to the unease and distress someone experiences upon seeing others in need. The empathic concern pathway has been described as a genuinely altruistic motivation as individuals provide support because they feel compassion or empathy. On the other hand, the personal distress pathway refers to more egocentric motivations because individuals provide support in order to alleviate their own feelings of distress. Previous literature has theorized and provided first evidence that observing tearful individuals might lead to an increase in distress (Hendriks et al., 2006; 2008) though this link has not been explored systematically. In our pilot study (Supplementary Material 2.8 - Main Pilot 4) we found that the social support effect was mediated by feelings of empathic concern but not personal distress.

Moderating Effects. As mentioned above, there are indications that the social-support effect might also be influenced by contextual factors such as the crier's gender or group membership, among others. Therefore, the third objective of the present project is to investigate in which conditions tears trigger social support intentions. The most important prediction that we

explain below is that some factors might strengthen or weaken the social-support effect of tears, but we never expect situations in which tears lead to fewer intentions to support than the control condition (i.e., the lack of tears).

Gender. Fischer and LaFrance (2015) reviewed evidence that women generally cry more than men. They attributed this finding to gender-specific social norms, social roles, and the situation, as well as the perceived intensity of the emotion. In some extreme situations such as funerals, norms may be more similar across the genders or it may be more acceptable for men to shed tears (Fischer, Manstead, Evers, Timmers, & Valk, 2004). Furthermore, whereas male tears are typically thought to be shed in serious situations, female tears are thought to exist in both serious and more mundane circumstances (Labott, Martin, Eason, & Berkey, 1991). These findings suggest possible differences in responses to male and female tears. However, empirical findings have yielded a rather mixed picture. In some studies, participants showed more willingness to help and were more positive towards a crying woman than to a crying man (Cretser, Lombardo, Lombardo, & Mathis, 1982), while other studies found no difference (Hendriks, Croon, & Vingerhoets, 2008; Zickfeld & Schubert, 2018), or even found the opposite effect such that crying men were perceived more positively (Labott et al., 1991). However, this might also depend on the gender of the observer, as a recent study suggests that willingness to support is lower when male observers are exposed to crying males, while female observers show no gender differentiation (Stadel et al., 2019). Thus, possibly gender effects (relating to the crier) interact with the social situation, the gender of the observer, and/or the specific situational valence. Notably, only a few of these studies directly tested the support intentions of observers but rather tested evaluations of the crying individuals. Despite the likely main effect of gender that women elicit more support intentions than men, if the social-support hypothesis is correct, both female and male tears should foster affiliation and support intentions in observers (though possibly moderated by social context and appropriateness, see later).

Reason for Shedding Emotional Tears (Situational Valence). There is little theoretical or empirical research regarding whether individuals respond differently to tears shed for positive versus negative reasons. Positive tears or *tears of joy* occur in response to joyful, moving, or amusing events (Zickfeld, Seibt, Lazarevic, Zezelj & Vingerhoets, 2019), while negative tears occur mostly in response to distress, sadness, or anger. Hendriks et al. (2008) found that positive crying was perceived as less appropriate and that participants indicated less willingness to support the crier in comparison to distress-related tears. However, a recent unpublished study failed to replicate this finding (as presented in Zickfeld et al., 2018) and found no difference in warmth perception of individuals crying due to positive versus negative reasons. Due to the fact

that individuals in negative situations are perceived as more helpless, it seems likely that in such situations people offer more support than in positive situations (Murube et al., 1999). Yet, also in positive situations in which people shed tears, people seem to feel overwhelmed and somewhat less in control of the situation (Gračanin et al., 2018). Because of this, the social-support hypothesis predicts that, in both positive and negative situations, tears increase affiliation (and, therefore, also support intentions).

Social Context & Perceived Appropriateness. Little consistent information exists on the importance of the social context for the perception of tears. Most studies focused on the perception of tears in work and family-related contexts (Fischer, Eagly, & Oosterwijk, 2013; Van de Ven, Meijs, & Vingerhoets, 2017). Findings generally show that men are evaluated less positively when shedding tears in a work context. In addition, individuals typically reported crying more frequently in private settings, such as at home or when they were alone with significant others (Vingerhoets, 2013). The question of the effect of tears occurring in a private versus a more public context may be especially important from a cross-cultural perspective, because evidence suggests that the perception of how appropriate the shedding of tears is perceived to be can play an important role in how it is responded to by others (Fischer et al., 2013). Emotional tears that are perceived as inappropriate would possibly reduce support intentions or even result in a backlash. Still, if the social-support hypothesis is correct, we expect tears to increase support intentions regardless of the degree of privacy of the social context (although when crying is seen as inappropriate in a specific context, this might create a distance from the target person that suppresses the strength of the effect).

Group Membership. The crier's group membership might also have an impact on the perceiver, especially whether the crier belongs to the observer's in- or outgroup. In the present project, we primarily focus on the subjective classification of the crier as part of one of the participant's social groups. Thus, participants might identify targets as part of their social groups based on various aspects such as appearance, gender, ethnicity, or background of the situation. Again, if the social-support hypothesis holds, tears should in general increase support intentions regardless of the group membership of the crier, though it might be moderated through exhibiting a preference for in-group members.

Trait Empathy. Finally, trait empathy has been proposed as an important moderator in the perception of emotional tears (Lockwood, Millings, Hepper, & Rowe, 2013; Sassenrath, Pfattheicher, & Keller, 2017). Sassenrath and colleagues (2017) found that sadness triggers more helping behavior and that this effect is stronger with more perspective-taking. The social-support hypothesis again expects individuals to show a general intention to support tearful individuals,

but this effect might be reduced for individuals low in trait empathy. Still, we think it is important to test whether the effect holds across the whole population or only for a specific group.

Culture. Next to individual-level moderators, culture-level moderators might play an important role whether tearful individuals receive support intentions (van Hemert et al., 2011). For example, social support intentions might be moderated by whether cultures endorse collectivistic values or show a high level of trust (van Lange et al., 1997). In addition, gender differences may be stronger in cultures that show higher gender inequality and have a strong focus on masculine norms and values (van Hemert et al., 2011). Due to the multitude of factors, we treat culture as an exploratory moderator in the present project. While we assume that some cultural norms or values moderate the social-support effect, we predict that it should be manifested across all countries.

In sum, several factors could mediate and moderate a possible affiliative function of emotional tears. Furthermore, where one of these components was examined, it is unclear how much the subsequent findings would hinge on the specific methods. Studies vary broadly across observed context or the stimuli used, which has resulted in sizeable heterogeneity among the findings. The present project will be the most comprehensive investigation of the attachment function of human emotional tears to date, including a total number of more than 3800 participants from 53 labs located on all populated continents (36 different countries).[5]

In general, the social-support hypothesis predicts a main effect that individuals who shed a tear prompt more intentions of support behavior than individuals who are not shedding tears. As reviewed above, this effect might firstly be mediated by several variables, including the perceived warmth, connectedness to, and perceived helplessness of the target and the experienced empathic concern or personal distress of the observer. Second, we expect the main effect to be moderated by a number of aspects, including the perceived appropriateness of shedding tears in that given situation, the gender or group membership of the crier, the social context, and trait empathy. However, the social-support hypothesis would argue that the main effect will not be moderated in a disordinal fashion, such that crying individuals evoke less affiliative intentions in contexts that are perceived as inappropriate. The effect could be reduced, but is not expected to exist as an effect of practical importance in the opposite direction, such that crying individuals in a perceived inappropriate context receive less support intentions than individuals with a neutral expression.

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[5] The total number of labs conducting the final protocol is likely to increase throughout the project period. As of today a total of 70 labs have signed up for conducting the study.

From Behavioral Intentions to Actual Behavior. It is important to note that the present project does not assess actual support behavior directly, which would be the most valid test of our hypothesis, if properly controlled. Instead, we employ reported person impressions and self-reported support intentions in response to (non)-tearful fictitious targets as our main dependent variables. There are many reasons why we do not assess actual behavior in the current project and think that measuring subjective self-reported intentions in response to a hypothetical situation is important and valuable as a first comprehensive investigation. First, if there is no effect across cultures on self-reported intentions to hypothetical situations then there is likely no effect on actual behavior in the real world. While we are aware of the gap between self-reported intentions and actual behavior (Sheeran & Webb, 2016), no systematic studies on the variability of the effect on self-reported intentions across non-Western countries exist. Thus, the results of our projects can be taken as a first indicator on the universality of the social-support effect on actual behavior (Van Kleef, 2016). Second, actual support behavior needs to be controlled properly, reducing the feasibility of including the proposed mediators and moderators. Focusing on actual behavior would reduce the understanding of the limits of the social-support effect as this has not been tested systematically. Third, our non-systematic literature review shows that the effect of self-reported intentions in response to hypothetical scenarios is rather strong. Similarly, the reviewed studies that focused on more behavioral measures such as subliminally presented stimuli or approach/avoidance movements (Balsters et al., 2013) or studies presenting real crying individuals (Hill & Martin, 1997) have found comparable effects with respect to the studies focusing on self-reported support intentions. Another key reason is that reports on support intentions are cost-effective and allow us to measure support without using for example deception across many different samples.

Measuring actual behavior is very relevant, also because culture might moderate the intention behavior link. Still, what is crucial for our testing of the theory is that we predict that the effect of tears on support intentions is a universal phenomenon, but we do not disagree that there are situational (or cultural) circumstances that might moderate the relation between intentions and behavior. In our view, studying actual behavior should follow the current project rather than replace it.

In the present project, we test our main effect by employing a standard paradigm showing either pictures of individuals showing a neutral expression or the same pictures with tears added digitally that has been successfully applied in past studies. Based on the social-support hypothesis, which states that emotional tears serve an attachment function in humans, we make the following predictions:

1. Participants will report more willingness to support tearful individuals than individuals not showing tears.

1b. Support intentions will be higher in negative situations than in the positive ones, and lowest in neutral situations. Still, we expect tears to increase support intentions in all these situations. Thus, we do not expect an interaction between the occurrence of tears and situational valence.

2. The effect of tears on willingness to support is mediated by perceived warmth, perceived helplessness, and perceived connectedness. Tearful targets will be perceived as warmer, more helpless, and participants will feel more connected towards them in contrast to non-tearful targets. In turn, perceptions of warmth, helplessness, and connectedness will result in more intentions to support the target.

2b. The effect of tears on willingness to support is mediated by felt empathic concern but not personal distress of the observer. Perceiving tearful targets triggers more experienced empathic concern, which results in more intentions to support the target.

3. An interaction effect of the occurrence of tears and situational valence on perceived warmth, helplessness, and connectedness. In *matching* conditions, crying in a negative or positive situation and not showing tears in a neutral situation, will be perceived as more appropriate, which in turn increases perceived warmth, perceived helplessness, and perceived connectedness.

4. An interaction between social context and the occurrence of tears. We predict less strong intentions to support in a public context than in a private one for tearful faces, while this difference is smaller for non-tearful targets.

5. A target gender effect on willingness to support, with participants, on average, indicating greater intentions to support crying female targets than male ones.

5b. An interaction effect between target gender and gender of the participant on willingness to support. Female participants will on average provide greater intentions to support female and male targets, while male participants are expected to only do so for female targets only.

6. A main effect of trait empathy on support intentions. Higher scores on empathy are related to increased intentions to support the targets. However, we still expect tears to increase support for people low on trait empathy.

7. A main effect of the degree of in-group inclusion of the crier. An increase in in-group identification will result in an increase in support intentions. However, we still expect tears to increase support intentions towards outgroups albeit to a smaller degree than support intentions towards in-groups.

All data, materials, and documents that we are allowed to share will be made publicly available on our project page upon publication (https://osf.io/fj9bd/).

Method

We performed several pilot studies in order to examine the effectiveness of the design and the stimuli. First, we tested whether the vignettes accompanying our tearful and non-tearful stimuli were perceived as positive, negative, or neutral (Supplementary Material 2.1 & 2.2 - Situation Ratings). Afterward, we first tested a mixed design but found that our main manipulation did not work as intended (because the tears were not visible enough; Supplementary Material 2.4 - Main Pilot 1). We updated the materials (Supplementary Material 2.5) and tested the revised stimulus set in a within-subjects design. After revising our main design, we performed three additional pilot studies in order to get a further basis for a power analysis for our main study (Supplementary Material 2.6 - 2.8). All information is provided in the Supplementary Material.

Participants. Based on a non-systematic literature review, we identified the *warmth* effect as the smallest main effect ($d = .45$ [.33, .58], see Supplementary Material, Figure 1.2.2). Using the *simr* package (Green & MacLeod, 2016) in *R* (R Core Team, 2018) and the multilevel model obtained from our pilot study (Main Pilot 3), we performed a power simulation (alpha level at .05). The pilot study sample size, which included 71 participants (279 cases), had a post-hoc power of 1. We, therefore, decreased the sample size until we reached a stable simulated power of .95, which was reached with a total sample of $N = 50$ (total number of cases 200 given four repetitions per participant). In order to account for possible exclusions and cross-cultural

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variability of the effect size, we aim to include a minimum of 80 participants (320 cases) per sampling location.[6]

Recruitment. We will recruit participating labs through a number of channels including personal contacts, StudySwap (https://osf.io/9aj5g/), and the Psychological Science Accelerator (PSA; Moshontz et al., 2018) actively recruiting samples not confined to European or North American contexts. We thus employ a convenience sample of countries around the world but do not sample systematically and representatively, something that limits the universality and generalizability of our findings, which will be considered in the General Discussion. An overview of all labs is provided in Table 1. Each lab will aim to reach a final sample of at least 80 adults aged 18 or older using an online survey (Qualtrics, Provo, UT). Most labs will target convenience samples such as undergraduates, while other labs will sample broader populations (Table 1). Although the sampling strategy has implications for the generalizability of our findings, as it is not directly representative of the world's population, it is still more varied than most psychological studies (e.g., Rad et al., 2018). We will address the issue of our convenience sampling directly, by comparing (psychology) undergraduates with non-student populations in order to assess whether a background in psychology might bias results. Controlling for this aspect in previous studies does not seem to support the idea that psychology undergraduates respond differently (see Supplementary Material 1.4).

Table 1. Overview of sampling locations, sample characteristics, and language.

Region[1]	Subregion[1]	Country	Lab ID	Sample	Location	Language
Africa	Western Africa	Nigeria	NGA_001	G/U	University of Nigeria	English
	Southern Africa	South Africa	ZAF_001	U	University of South Africa	English
Americas	North America	United States of America	USA_001	U	Ithaca University	English
	South America	Argentina	ARG_001	U	INCYT	Spanish
		Chile	CHL_002	U	CSCN Adolfo Ibanez University	Spanish
		Colombia	COL_001	U	Universidad de los Andes	Spanish
			COL_002	U	Universidad del Rosario	Spanish
Asia	Eastern Asia	China	CHN_001	U	China Europe International Business School	Chinese

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[6] We aim to achieve at least 95% power for the main effect of the social-support hypothesis in each separate sample. The moderation and mediation effects will possibly show a somewhat lower power in each individual sample but not across all labs combined. For example, the smallest mediation effect identified by our non-systematic overview for perceived warmth (*beta* = .08, see Supplementary Material) achieves 95% power across 240 cases (Schoemann, Boulton, & Short, 2017), which we clearly oversample.

			CHN_002	U	Huazhong University	Chinese
			CHN_004	U	Nanjing University	Chinese
		Japan	JPN_001	G/U	Kyoto University	Japanese
		South Korea	KOR_001	U	Korea University	Korean
	Southeastern Asia	Malaysia	MYS_001	U	Monash University Malaysia	English
		Philippines	PHL_001	U	De La Salle University	English
		Singapore	SGP_001	U	Singapore Management University	English
			SGP_002	U	Nanyang Technological University	English
		Thailand	THA_001	U	Chulalongkorn University	Thai
	Southern Asia	India	IND_001	U	Indian Institute of Technology Kanpur	Hindi
		Pakistan	PAK_001	U	University of Sargodha	English
	Western Asia	Israel	ISR_001	G/U	The Open University of Israel	Hebrew
			ISR_002	U	Tel Aviv University/Ben Gurion University	Hebrew
			ISR_003	U	University of Haifa	Hebrew
		Turkey	TUR_001	U	Muğla Sıtkı Koçman University	Turkish
			TUR_002	U	Koç University	Turkish
			TUR_003	G/U	Üsküdar University	Turkish
		United Arab Emirates	ARE_001	U	United Arab Emirates University	English
Europe	Eastern Europe	Hungary	HUN_001	U	ELTE Eötvös Loránd University	Hungarian
		Poland	POL_001	U	Jagiellonian University	Polish
		Slovakia	SVK_001	U	Pavol Josef Šafárik University in Košice	Slovakian
	Northern Europe	Norway	NOR_001	U	University of Oslo	Norwegian
		Finland	FIN_001	U	University of Jyväskylä	Finnish
			FIN_002	U	University of Turku	Finnish
		Great Britain	GBR_001	U	University of Chester	British English
			GBR_002	G	Prolific.ac	British English
	Southern Europe	Bosnia and Herzegovina	BIH_001	U	University of Mostar	Croatian
		Croatia	HRV_001	U	University of Rijeka	Croatian
			HRV_002	U	University of Zadar	Croatian
		Greece	GRC_001	U	Panteion University	Greek
		Portugal	POR_001	U	ISCTE Lisboa	Portuguese
		Serbia	SER_001	G/U	University of Belgrade	Serbian

		Spain	ESP_001	U	University of the Basque Country	Spanish
			ESP_002	U	Universidad Autónoma de Madrid	Spanish
	Western Europe	Austria	AUT_001	U	University of Graz	German
		France	FRA_001	G/U	Université Grenoble Alpes	French
		Germany	DEU_001	U	University of Duisburg-Essen	German
			DEU_002	U	University of Mannheim	German
			DEU_003	U	WWU Münster	German
		the Netherlands	NLD_001	U	Tilburg University	Dutch
			NLD_002	U	University of Amsterdam	Dutch
			NLD_003	U	University of Groningen	Dutch
Oceania	Australia & New Zealand	Australia	AUS_001	U	University of Queensland	English
		New Zealand	NZL_001	U	Victoria University of Wellington	English

Note. [1]Regions and subregions are based on the UN M49 coding scheme. U = undergraduates, G = general population.

Translation. Translations are performed using a five-step back-translation method modeled on the PSA guidelines (Moshontz et al., 2018). First, a bilingual person translates the material from American English to the target language. Then, another bilingual person translates the resulting material independently back to English. Subsequently, translators discuss similarities and differences in the two versions with a third bilingual individual. The resulting preliminary version is given to two non-academics fluent in the target language that report perception and possible misunderstandings. After making cultural adjustments the final version of the translation is produced. Note that some language versions will be used for several countries (e.g., Latin America).

Ethics. Each lab has received ethical approval from the local Institutional Review Board (IRB) or ethics committee or has explicitly indicated that the respective institution does not require approval for this kind of study. Participants will always provide informed consent prior to the study. Consent forms might differ minimally across labs due to regional differences in requirements. All data will be stored on a local server at the University of Oslo and will be made publicly available upon publication at the project page (https://osf.io/fj9bd/).

Exclusion Criteria. Participants will be excluded if they complete less than 50% of the questionnaire and/or indicate that their age is younger than 18 years. Participants will also be excluded on a casewise basis if they fail the attention check. The attention check is failed if

participants select another situation than that described for the actual target (see Supplementary Material 2.1 for an overview of situations). Finally, participants will be excluded if their nationality differs from the location of the lab and they also indicate that the country of the lab location has not influenced them most culturally.[7]

Procedure. We will employ a 2 (occurrence of tears: tears vs. no tears) x 3 (situational valence: positive vs. negative vs. neutral) x 2 (target gender: male vs. female) x 2 (social context: public vs. private) x 5 (group membership: Black vs. Asian vs. Latinx vs. Middle East vs. White) within-subject design.[8,9]

Following informed consent, participants will be exposed to four targets. Every participant will be randomly presented with two tearful and two non-tearful targets (occurrence of tears). In addition, all possible combinations of the valence of the situation, the gender of the target, the group membership of the target, and the social context (whether the situation occurs in a public or private place) will be randomly presented. Thus, while participants will always see two tearful and two non-tearful targets whether the described situation is positive, neutral or negative, whether the background will occur in public or privately, whether the target is male or female and the target's group membership will be determined fully at random. For each target, participants will complete the same measures.

Materials.

Main Stimuli. We will employ a total of 100 different stimuli that represent five different 'ethnic' groups (as characterized by the respective databases): White, Asian, Black, Latinx, and Turkish. We randomly chose 20 stimuli from each group representing ten females and ten males. All individuals show a neutral expression. Stimuli including individuals from European, Asian, African American, and Hispanic descent are taken from the Chicago Face Database (Ma, Correll, & Wittenbrink, 2015). Pictures of Turkish individuals from a Mediterranean, Middle Eastern, or Balkan background are taken from the Bogazici database (Saribay et al., 2018). For each picture,

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[7] Additionally, we will perform our main analyses including those participants indicating that the country of the lab location has not influenced them the most culturally in an exploratory fashion.

[8] Importantly, this full-factorial design signifies that neutral situations can be presented with a crying target, whereas positive/negative situations are sometimes shown using a neutral target. These combinations will have decreased ecological validity than the remaining combinations as it for example would be unlikely for someone to cry when drinking a glass of water (one of the neutral situations). However, by using a wide combination of situations and tearful targets we increase the overall ecological validity of the design, as we isolate the tear-effect from situational effects.

[9] The full within design might bias responding as being presented with both crying and non-crying targets could induce demand characteristics – participants might guess the hypothesis and act accordingly. Therefore, we will also report our main analyses using only the first target. Comparing between with within designs in previous studies does not support evidence for demand effects in our design (see Supplementary Material 1.4)

tears are digitally added using a procedure developed by Küster (2015; see Figure 1 for an example).

Figure 1. Example images from the Chicago Face Database (Ma et al., 2015). Original images are presented on the left-hand side. Modified images with digital tears added are shown on the right-hand side. Note that the male stimulus is not used in the present project due to our randomization technique not choosing this image from the total pool.

This technique has been successfully employed in previous studies (e.g., Balsters et al., 2013; Küster, 2018) and has several advantages. First, in contrast to describing crying individuals in a

vignette, presenting pictorial stimuli mimics real-world perception of emotional tears more validly. Second, while the removal of tears from pictorial stimuli has been proven to be a valuable technique, crying faces possibly transmit more information than only visible tears, such as specific muscle contractions and overall facial expression. Starting with neutral facial expressions allows us to systematically control for these aspects. Development of tearful stimuli was performed in several rounds, and all the pictures were pilot tested in a reaction time study to determine whether the study participants perceived visible tears (see Supplementary Materials 2.5 - Stimulus Rating). Thus, our final stimulus pool contains 200 pictures: 100 tearful and 100 non-tearful, balanced across 50 different males and females from five different backgrounds.

Situations. Situations are randomly selected from a pool of six pre-tested situations for each category (positive, neutral, negative) based on topics identified by Vingerhoets (2013) and Zickfeld et al. (2019; see Supplementary Materials 2.1-2.2). Each situation exists in a *public* version, in which the depicted individual expresses the (non-)tearful reaction with strangers present, and also in a *private* version, which describes the protagonist being alone or accompanied only by significant others. The broad range of situations helps to prevent our effects from being too situationally specific.

Measures. First, participants will be provided with a description of the background situation at the top of the page and a picture of the target. Targets are presented at 600x600px and repeated four times across the whole page with the situations always added below the picture.

Support Intentions. Participants are first asked about their intentions to support the target with three items adapted from previous research on social support (Schwarzer & Schulz, 2003; Hendriks, Croon, et al., 2008; Van de Ven et al., 2017; Vingerhoets, Van de Ven, & Van der Velden, 2016). We will include items that are applicable across the broad range of presented situations. The final items include "I would be there if this person needed me", "I would express how much I accept this person", "I would offer support to this person". The three items will be averaged into one intention-to-support score.

Perceived Appropriateness. Then, participants will be asked to report how appropriate the expression of the depicted person is, in order to assess perceived appropriateness of the reaction.

Perceived Warmth. Next, we assess perceptions of *warmth*. We will apply the items *warm* and *friendly*, which were the two strongest items from the four items used to assess warmth in previous studies (Van de Ven, Meijs, & Vingerhoets, 2017; Zickfeld & Schubert, 2018; Zickfeld et al., 2018; see Supplementary Material 2.3 for selection procedure).

Perceived Competence, Honesty, Dominance, & Attractiveness. In addition, though not focal to the present project, we will measure perceived *competence, honesty, dominance,* and

attractiveness of the target. For competence, we include the items *competence* and *capable*, identified through the same procedure as the warmth items. To assess honesty, we will use two items from previous studies (Picó et al., 2020): *honest* and *reliable*. Finally, we include an item targeting perceived dominance using *dominant* and attractiveness using *attractive* (Oosterhof & Todorov, 2008).

       Perceived Helplessness. Subsequently, participants will be prompted with three items assessing perceived helplessness based on Vingerhoets et al. (2016). Items assess how *helpless*, *overwhelmed*, and *sad* the targets are perceived to be.

       Perceived Connectedness. Afterward, participants will complete the Inclusion of Others in the Self (IOS) scale to assess their perceived connection with the target (Aron, Aron, & Smollan, 1992). The IOS scale consists of seven Venn-like diagrams that show two circles increasing in overlap, with the left circle of each pair referring to the respondent and the right one to the depicted target.

       Perceived Feeling Touched/Other Emotions. In addition, not focal to the main hypotheses, we will employ an item as used by Zickfeld and colleagues (2018) targeting how *touched and moved* the targets are perceived to be. We also add an option for participants to indicate whether they perceive the target to be feeling additional emotions including *anger*, *joy*, *pride*, *disgust*, *fear*, *surprise*, *no emotion/neutral,* and *other*, which allows participants to write their own answer.

       State Empathic Concern/Personal Distress. To assess participants' reactions towards the target we will also measure state empathic concern and personal distress. We will retain two items per construct, each based on the highest component loadings as reported in Batson et al., (1987). Empathic concern is measured with *compassionate* and *softhearted*; for personal distress we will use the items *upset* and *disturbed*.

       Perceived Valence. We will assess how *positive* and *negative* the participants perceive the targets to be.

       Group Identification.[10] Finally, we will also assess to what degree participants include the target in one of their social groups. Participants will be asked to what degree they think the presented target is part of one of their social groups.

       All items will be completed on a 7-point scale ranging from *not at all* to *very much so*, except for the *other* emotion rating that uses a dichotomous format and the IOS scale that

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[10] Note that this variable focused on the target's *ethnicity* in the pilot studies. As this operationalization can be problematic because ethnicities are not restricted to certain countries or cultures, we decided to assess the general degree of subjective in-group inclusion of the target.

displays circles. Finally, to probe for attention, participants will be asked to select the situation the depicted target was experiencing, which is presented as one among a number of different situations randomly selected from the total pool.

Trait Empathic Concern. After having completed these measures for all four targets, participants will complete the *empathic concern* dimension of the Interpersonal Reactivity Index (IRI; Davis, 1980) assessing trait (affective) empathy. The empathic concern subscale consists of 7 items (e.g., "I often have tender, concerned feelings for people less fortunate than me") and is completed on a 5-point scale with anchors at *Does not describe me well* to *Describes me very well*.

Demographics. Finally, participants will provide demographic information including gender, age, nationality, and the number of children they have. If participants indicate a different nationality than the location of the lab, they will be presented with a dichotomous item probing whether the country of the lab location has influenced them most culturally. Participants will also complete a measure assessing their employment status including six answer alternatives: *student*, *employed*, *self-employed*, *unemployed*, *retired*, and *other*. In the end, participants will be debriefed.

Analysis Plan

For all analyses, we set the alpha level at .05. We will analyze the data employing multilevel models and the *lme4* package in *R* (Bates, Mächler, Bolker, & Walker, 2015). We will report unstandardized effect sizes *B* and their 95% confidence intervals, and standardized effect sizes *d* based on transformations by Bowman (2012) and Lakens (2013). In addition, we will present overall effect sizes R^2 (Page-Gould, 2016). For the main models, we always add participants nested in countries, targets nested in ethnicities as random effects, and allow their intercepts to vary randomly (Judd, Westfall, & Kenny, 2012). An overview of all models is presented in Table 2. In general, we will perform equivalence testing in order to quantify support for the null hypothesis for the main effects (Lakens, 2017). We will set the effect size of least interest to d = +/- .20 and use the *TOSTER* package to test for equivalence. With our expected total sample size of around 3000 participants, even very small effects will likely be statistically significant. With the equivalence test, we can evaluate if the minimal effects are indeed very small (statistically significantly smaller than d = |0.20|), and if they are, we will not interpret them. When running exploratory tests after testing our main hypotheses, we will employ Bonferroni corrections for multiple comparisons.

Transformations. The three items on support intentions will be averaged into one intention-to-support score. The two items on warmth, empathic concern, personal distress, as well

as the three items on perceived helplessness, will be averaged into perceived warmth, felt empathic concern, personal distress, and perceived helplessness scores, respectively. In addition, the seven items of the empathic concern subscale will be averaged into a trait empathic concern score (three of these items are reversed scored and will be transformed prior to averaging). We will calculate internal reliabilities using Pearson's correlation coefficient for the perceived warmth, felt empathic concern, and personal distress, and using Cronbach's alpha for intention-to-support, perceived helplessness, and empathic concern. Metrics will be calculated for the overall sample (and for each lab separately in the Supplementary Material). If internal reliability is inadequate ($r/a < .65$) we will also compute each model for the two items separately and compare results. For our main models, factors will be coded using effects coding and continuous variables (perceived appropriateness, group identification, and empathic concern) will be mean centered.

Measurement Equivalence. The topic of measurement equivalence is of high importance in cross-cultural research (Van de Vijver & Tanzer, 2004). It tries to address the question of whether measures are completed similarly across different languages and cultures and is an important prerequisite for comparing effect sizes or mean ratings. However, adequate model fit for *strict* or *scalar* equivalence, referring to equal intercepts thereby allowing the comparison of mean scores, has low practical applicability especially given a high number of countries as in the present project (Byrne, Shavelson & Muthén, 1989). Therefore, we will test for partial measurement equivalence for the main outcome measure (intention to support) across countries. Partial equivalence will be achieved with a model fit of at least CFI = .90, RMSEA = .08 for the metric solution (He & van de Vijver, 2012). If we fail to achieve partial equivalence, we will exclude countries that show deviation from the solution and repeat the main models for these excluded countries and the remaining ones separately.

For the main analyses, we will first provide an overview of the mean ratings and the respective standard deviations for each variable across the situations (neutral, negative tears, and positive tears) and across all samples. In addition, we will provide a correlation matrix among all main variables separately for the occurrence of tears and the three types of situations. The Supplementary Material will contain these details for each lab separately. An overview of the main analyses is provided in Table 2.

H1/H1b. Tearful Targets Induce Support Intentions. In our main model (H1), we will add the intention-to-support score as the dependent variable and the occurrence of tears as the independent variable (contrast coded: -.5 = no tears, .5 = tears). We will add participants nested in country, as well as targets nested in ethnicity, as random effects and allow their intercepts to

vary randomly. In addition, we will plot the same relationship in a random-effects meta-analysis using the *metafor* package (Viechtbauer, 2010). We will examine the heterogeneity of effects using I^2. In a different model (H1b) using the same random effects, we also add situational valence (which is coded by two orthogonal contrasts: contrast A: -.66 = neutral, .33 = negative, .33 = positive; contrast B: 0 = neutral, .5 = negative, -.5 = positive) in addition to occurrence of tears and their interaction.

In order to test for possible sample and demand effects, we will repeat the main model (H1) focusing on two additional aspects. First, we will add another variable coding for the occupation of participants by comparing students against non-students (-.5 = students, .5 = non-students [including the categories: employed, self-employed, unemployed, retired, and other]) and its interactions with occurrence of tears. Second, we will rerun the random-effects meta-analysis of the main model using only the first target presented to each participant. The meta-analytic effect size will be compared to the original one. Finally, we will repeat the main model using the predictor coding for occupation and also a factor coding for the order of presentation (-.5 = first, .5 = second to fourth) as well as their interaction.

H2. Mediation by Perceived Warmth, Helplessness, and Connectedness. First, using the same model as in H1 we will test whether tearful individuals are perceived as warmer and more helpless and whether participants feel more connected to them. We do this again using a multilevel model and a random-effects meta-analysis. For the mediation model, we will construct three different multilevel models: *path a*, *paths b & c'*, and *path c*. For *path a*, we will employ the occurrence of tears as the dependent variable and perceived warmth, perceived helplessness and the IOS score as the independent predictors using a *glmer* binomial model. For *paths b* and *c'*, we will regress intention to support on perceived warmth, perceived helplessness, IOS, and occurrence of tears. Finally, *path c* will be estimated by the model fitted in H1. To construct a 95% confidence interval around the indirect effect (*path a * path b*), we will employ a Monte Carlo simulation (Falk & Biesanz, 2016).[11] Additionally, we will repeat the moderation model as indicated in H4-7 with each of the three mediating variables as the dependent variable separately in an exploratory fashion.

H2b. Mediation by State Empathic Concern and Personal Distress. To test state empathic concern and personal distress as mediating variables we will employ the same procedure as outlined in H2. The occurrence of tears will be used as the independent variable, state empathic concern and personal distress as the mediators, and intention to support as the

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[11] The program is obtained from: http://www.psych.mcgill.ca/perpg/fac/falk/mediation.html#CIcalculator

dependent variable. We will finally compare the indirect effects via empathic concern and personal distress.

H3. Mediation by Perceived Appropriateness. Using the same procedures as outlined in H2 we will test whether perceived appropriateness mediates the effect of the occurrence of tears with the situational valence interaction on perceived warmth, helplessness and connectedness. We will perform three separate models with perceived warmth, helplessness and connectedness as the dependent variable, the interaction between the occurrence of tears and situational valence as the independent variable, and perceived appropriateness as the mediator. For *path a*, we will employ the occurrence of tears x situational valence interaction as the independent variable and perceived appropriateness as the dependent variable. For *path b* and *c'*, we will regress perceived warmth (or in the other models perceived helplessness or connectedness) on perceived appropriateness and the interaction between occurrence of tears and situational valence. For *path c*, we will use the model described in H1b with perceived warmth, helplessness, or connectedness as the dependent variable.

H4-7. Moderating effects on Support Intentions. In addition, we will test the influence of several variables on the effect of tearful individuals on support intentions. Again, we will use the intention-to-support score as the dependent variable. As a factor, we will again add the occurrence of tears. We will add target gender (H5; .5 = female, -.5 = male), social context (H4; -.5 = public, .5 = private), and the gender of the participant (.5 = female, -.5 = male). We will include *other* as a category in targeting the gender of the participants, and if more than 5% of the total sample indicate this option, we will also include this level in the participant gender factor. Otherwise, we will drop those cases. As covariates, we will add group identification as measured by the degree of subjective inclusion of the pictured target in the participant's in-group (H7). We also add the trait empathic concern score (H6). As two-way interactions, we will include all interactions with the occurrence of tears and the interaction between target gender and gender of the participant (H5b). We will explore the main effects and interactions by inspecting estimated means. For follow-up contrasts, we will calculate Cohen's *d* and its 95% confidence interval for each comparison. As illustrated above, we will employ equivalence testing to assess whether these effect sizes differ significantly from the smallest effect size of interest.

Note that we do not test all possible interactions. The main reason is that there are a large number of interactions for which we do not have specific hypotheses. We fully realize that possible other interactions exist and that those could be of interest to other researchers. As the data will be publicly available, other researchers can explore additional hypotheses of interest.

Exploratory Analyses. In order to explore the potential impact of culture on the social-support effect, we will re-run our main model (H1) accounting for several culture level indices that have been related to emotional expressiveness or responsiveness, social support, or other important aspects (Supplementary Material 3.1). As we only have specific hypotheses for some of them, we will treat this from an exploratory angle. In total, we will focus on 32 different country-level variables that are presented in their entirety in the Supplementary Material 3. To reduce overfitting, we will use a split-half cross-validation technique by randomly dividing the full dataset into two halves (IJzerman et al., 2018). In the first half, we will compute a meta-regression based on the random-effects meta-analysis of H1 including all country-level indices as moderators. We will set our alpha level at .10 to be overly inclusive. For the second half, we will repeat the meta-regression using only the statistically significant predictors from the first half dataset one-by-one. We will set our alpha level at .005 for this confirmatory aspect. The amount of heterogeneity explained by the combined and individual moderators will be inspected.

Importantly, there are many additional cross-country variables that might be considered as potential moderators for the main effects. We encourage researchers to explore such associations when the data have been made publicly available.

Table 2. Analysis plan

Model	Dependent Variable	Independent Variables			Random Effects
		Factors	Covariates	Interactions	
H1: Main Model	Intention to Support	Occurrence of Tears (OT)			Country/Participant Ethnicity/Stimulus
H1b: Main Model	Intention to Support	OT + Situational Valence (SV)[i]		OT*TT	Country/Participant Ethnicity/Stimulus
H2: Main Models	Perceived Warmth	OT			Country/Participant Ethnicity/Stimulus
	IOS	OT			Country/Participant Ethnicity/Stimulus
	Perceived Helplessness	OT			Country/Participant Ethnicity/Stimulus
H2: Mediation Model					
Path a	OT		Perceived Warmth + IOS + Perceived Sadness		Country/Participant Ethnicity/Stimulus
Path b + c'	Intention to Support	OT	Perceived Warmth + IOS + Perceived Sadness		Country/Participant Ethnicity/Stimulus
Path c	Intention to Support	OT			Country/Participant Ethnicity/Stimulus
H2: Moderation Model (Exploratory)	Perceived Warmth	Occurrence of Tears (OT) + Target Gender (TG) + Social Context (SC) + Gender (GE)	Group Identification (GI) + Trait Empathic Concern (tEC)	OT*TG OT*SC OT*GE OT*GI OT*tEC	Country/Participant Ethnicity/Stimulus
	ISO (Perceived Connectedness)	"	"	"	"
	Perceived Helplessness	"	"	"	"
H2b: Mediation Model					
Path a	OT		State Empathic Concern + Personal Distress		Country/Participant Ethnicity/Stimulus
Path b + c'	Intention to Support	OT	State Empathic Concern + Personal Distress		Country/Participant Ethnicity/Stimulus
Path c	Intention to Support	OT			Country/Participant Ethnicity/Stimulus
H3: Mediation Model					
Path a	Perceived Appropriateness	OT + SV		OT*SV	Country/Participant Ethnicity/Stimulus

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Path b + c'	Perceived Warmth/IOS/Perceived Helplessnes	OT + SV	Appropriateness	OT*SV	Country/Participant Ethnicity/Stimulus
Path c	Perceived Warmth/IOS/Perceived Helplessnes	OT + SV		OT*SV	Country/Participant Ethnicity/Stimulus
H4-7: Moderation Model	Intention to Support	Occurrence of Tears (OT) + Target Gender (TG) + Social Context (SC) + Gender (GE)	Group Identification (GI) + Trait Empathic Concern (tEC)	OT*TG OT*SC OT*GE OT*GI OT*tEC TG*GE	Country/Participant Ethnicity/Stimulus

Note. Coded by two contrasts: contrast A (neutral = -.66, negative = .33, positive = .33), contrast B (neutral = 0, negative = .5, positive = -.5). All covariates are mean centered.

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