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**Threat perception and compassionate reactions towards a
suffering target: the role of dispositional compassion.**

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ABSTRACT

La compassione è definita come una "profonda consapevolezza della sofferenza altrui, unita al desiderio di alleviarla" (Gilbert, 2009, p.13). Nel 2016, Strauss e colleghi hanno elaborato il costrutto sintetizzandolo in un modello multi-dimensionale a 5 facce: capacità di *riconoscere* la sofferenza altrui; capacità di capire che la sofferenza è parte della *comune esperienza umana*; capacità di sentirsi *emotivamente connessi* alla sofferenza altrui; capacità di *tollerare* sentimenti spiacevoli derivanti dall'essere esposti alla sofferenza altrui; capacità di *agire* o l'essere motivati ad alleviare la sofferenza altrui. Un filone di ricerca si è focalizzato sullo studio delle caratteristiche altrui che influenzano le nostre reazioni compassionevoli. Batson (2007) ha proposto un modello in cui la preoccupazione empatica, antecedente i comportamenti d'aiuto, è promossa dall'assunzione della prospettiva del target e parzialmente mediata dalla valutazione di esso. Vale a dire che, quando un individuo viene valutato positivamente, il suo punto di vista viene assunto in maniera naturale e, di conseguenza, la preoccupazione empatica risulta maggiore. Inoltre, la sua valutazione positiva implica direttamente un'aumentata empatia.

La percezione di minaccia è una risposta adattiva alla codifica di qualcosa o qualcuno di pericoloso (Green, 2004). Una risposta di questo tipo si rivela adattiva in quanto assicura la sopravvivenza della specie umana (e animale) inducendo uno stato di attivazione emotiva che facilita una successiva reazione comportamentale. Il meccanismo di percezione di minaccia ha sia una base innata e automatica, che una base appresa tramite l'esperienza, derivante o da associazioni condizionate o da modellamento sociale.

Tramite un disegno fattoriale 2 x 2, la presente ricerca indaga le diverse reazioni delle persone di fronte ad un individuo che viola le norme morali, sia in termini di reazioni compassionevoli verso il target che in termini di percezione del suo comportamento come minaccioso. Inoltre, è stato testato un eventuale effetto moderatore della compassione disizionale sulle due variabili dipendenti. Tramite la presentazione di una storia fittizia, un target vittima di infortunio sul lavoro veniva presentato come una figura positiva o come una figura negativa. Una volta letto uno dei quattro possibili scenari, i partecipanti dovevano rispondere ad un questionario self-report che includeva una scala per la misurazione delle reazioni compassionevoli, una per la percezione di minaccia e la Compassion Scale proposta da Pommier (2020).

I dati raccolti sono stati analizzati statisticamente tramite analisi della varianza, regressione lineare e t-test. I risultati ottenuti indicano che i soggetti presentano minori reazioni compassionevoli nelle condizioni in cui il target viene valutato negativamente. Inoltre, il suo comportamento viene percepito come più minaccioso nella condizione in cui viola le norme di care, che si riferiscono al prendersi cura degli altri. Invece, l'analisi della compassione disizionale come variabile moderatrice non ha prodotto risultati significativi.

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1. THEORETICAL BACKGROUND

1.1 DEFINITIONS OF COMPASSION

According to general knowledge, *compassion* is a feeling of sorrow triggered by the perception of one's pain. Indeed, the word compassion stems from the Latin “*cum-*” and “*passion*”, meaning “together with” and “suffering”, respectively. In psycho-social literature, however, the definition of this construct is much more elaborated. Researchers widely agreed that compassion involves feelings of concern towards suffering individuals and a subsequent desire to act in order to relieve their pain. In Gilbert's words, compassion consists of “a deep awareness of the suffering of another coupled with the wish to relieve it” (2009, p.13). A similar conceptualization is found in Buddhist spiritual framework: “Compassion is an aspiration, a state of mind, wanting others to be free from suffering. It's not passive, it's not empathy alone, but rather an empathetic altruism that actively strives to free others from suffering” (Dalai Lama, 2005, p.49). In pursuance of a comprehensive definition of the construct, some authors proposed a multi-dimensional conceptualization of compassion. Kanov et al. (2004) proposed a three-step model involving three components, namely affective, cognitive and behavioral. The first step consists in *noticing* a person's suffering, either consciously, via its cognitive recognition, or unconsciously, by an emotional reaction to the other's distress. Subsequent to this awareness, there is a *feeling* of empathic concern, namely an emotional response triggered by adopting the person's perspective. Such feelings finally activate a behavioral response (*responding*), aimed at attempting to eliminate, or at least ease, the other's painful condition. Few years later, Gilbert (2009) adopted a similar framework to develop a new conceptualization of compassion. According to him, compassion consists of six facets. Analogous to Kanov's “*noticing*”, *sensitivity* refers to the perception of one's pain. *Sympathy*, defined as apprehension for the other's condition, and *empathy*, defined as the adoption of their perspective, both correspond to Kanov's “*feeling*” facet. The desire to help alleviate the pain is referred as *motivation to act*. Additionally, given that people might get overwhelmed when exposed to another's suffering, and that this could automatically activate coping mechanisms aimed at reducing their own distress, Gilbert considered *distress tolerance* to be a prerequisite for compassionate responses. The last attribute is *non-judgement*, interpreted as the ability to keep an open attitude and remain tolerant even if the target's condition, or their reaction to it, induces negative feelings in the self (e.g., anger, fear or disgust). In order to recap all the aforementioned definitions that, although share some similarities, are not exactly consistent one to another, Strauss et al. (2016) proposed a new, omni-comprehensive model of

dispositional compassion. Again, compassion was conceptualized as a multi-dimensional construct, composed of five facets, which include cognitive, affective and behavioral processes:

- *Recognizing* others' suffering: analogous to Kanov's *noticing* facet and Gilbert's *sensitivity*, it is the perception of the others' painful condition.
- Understanding the *universality* of suffering in human experience: it concerns the awareness of the fact that suffering is a natural and inevitable part of everyone's life.
- *Feeling* empathy for the suffering target and connecting with their distress: this dimension not only implies the adoption of a target's perspective, but also includes the emotional resonance within one's self of the other's condition.
- *Tolerating* uncomfortable feelings triggered by the other person and accepting their suffering condition: proceeding from Gilbert's conceptualization of *distress tolerance*, *tolerating* is about the ability to remain composed in order to focus on the other's distress and not to one's own.
- *Acting* represents the motivation to act (or a real action) to ease others' suffering: akin to Kanov's *responding* dimension and Gilbert's *motivation to act*, it refers to the behavioral component of compassion.

As reported above, researchers conceptualized compassion as an emotional state. That is, compassionate reactions are intended as instant responses induced by immediate situational factors (Fridhandler, 1968). Nonetheless, each individual differs in their inner dispositions, so compassion can also be thought of as a trait (Eisenberg et al., 2002). By definition, traits are general patterns of responses that remain stable across time and context, revealing an individual's personality (Fridhandler, 1968). In this sense, compassion is considered to be an enduring prosocial disposition that sets individual differences in concern for others and motivation to alleviate their suffering (Goetz et al., 2010).

1.2 TARGETS OF COMPASSIONATE REACTIONS

Besides varying amongst individuals, compassion also fluctuates within them (Hofmann et al., 2014). Indeed, both affective and behavioral components of compassion imply the investment of one's own resources, such as emotional distress, time and assistance. Providing support to any individual in need would therefore rapidly consume great loads of our personal resources. For this reason, embracing compassionate responses in a consistent way would not result in a very adaptive strategy (DeSteno, 2015). Indeed, according to

evolutionism, human populations completely based on cooperation (vs. defection) proved to be unstable, eventually extinguishing themselves due to challenges they were not able to overcome (Nowak, 2012). Differently, more successful societies are the ones who balance their prosocial behaviors by selecting who is worthy of help and who is not (DeSteno, 2015). But how do we determine when to feel compassion for someone? The Dalai Lama (2005) claims that affection is not a necessary prerequisite for compassion to come into play. In Frakes' words (2010), "compassion can be directed not only to those known, but also to those unknown to the agent". Further studies conducted by Batson et al. (2007) revealed that valuing the welfare of the person in need is an important antecedent of empathic concern. When we place positive value on someone, we naturally tend to adopt their perspective: we put ourselves in their shoes and start imagining what they are feeling or thinking. Such perspective taking induces greater empathic concern and a subsequent boost to prosocial behavior. The authors conceptualized this idea in a model that considers a partial mediating role of the evaluation of a target on empathic concern. The way in which we value someone influences empathic concern in two ways, both directly and indirectly, soliciting the adoption of the other's perspective. Next, empathic concern itself triggers helping behavior. In support to this model, in 1997 Batson et al. compared levels of empathic concern in experimental groups that were either induced to take the perspective of a suffering target or not. Results proved that the adoption of others' perspectives enhances empathy. Consistently with Kanov's (2004), Gilbert's (2009) and Strauss's (2016) definitions of compassion, such empathic concern leads to a motivation to act in the target's help. Differently, this mediator effect of perspective taking on empathy doesn't take place when we negatively value the welfare of the person in need. Hence, in these circumstances, compassionate reactions are inhibited.

1.3 MORAL NORMS

Morality refers to the set of socially determined norms and values that aim to regulate people's conduct by suggesting them what should and should not be done. In Turiel's words, the moral domain concerns "prescriptive judgments of justice, rights and welfare pertaining to how people ought to relate to each other" (1983, p.3). According to Alexander (2017), our moral systems have a biological base which is then shaped by the cultural context. Over time, human beings developed some moral foundations that proved adaptive for living with others. These inner psychological mechanisms are the basis on which socialization tailors standards and norms (Graham, 2009). Building on this conceptualization, Haidt and Joseph (2004) tried to identify a set of universally shared moral foundations. They adopted a "meta-empirical"

approach and surveyed works by a variety of scientists in order to find a core of values, standards and prescriptions shared across different cultures. In particular, two dimensions stood out: a general concern about the well-being of others, including taking care and protecting vulnerable individuals (Gilligan, 1993); and a widespread interest in justice, reciprocity and equality of human rights (Kohlberg, 1969). These foundations were respectively labelled *Care* moral norm and *Fairness* moral norm (Graham, 2009).

1.4 THREAT PERCEPTION

Threat perception is the estimation of something or someone as dangerous. Detection of threat in the social environment is crucial for species survival (Green, 2004) as it induces an emotional arousal that leads to a behavioral response. Indeed, this mechanism is widely believed to have an evolutionary basis. According to Ohman and Mineka (2001), individuals are provided with an innate specialized cognitive system that automatically activates when a threatening stimulus is perceived. The authors theorized the existence of a fear model that, once activated, triggers a defensive response. Such model would be particularly sensitive to situations that provided threats to the survival of our ancestors. Examples of threatening circumstances that affected our evolutionary past are heights, potentially deadly predators and wide-open spaces. Nonetheless, the range of dangerous stimuli can be expanded via social learning and conditioning. When we are repeatedly exposed to contexts that contain survival threats, we learn to associate them with an avoidance response. Thus, individuals have both an adaptive bias that quickly detects evolutionarily relevant threats and an ability to learn new types of stimuli they have to watch out for (Green, 2004).

But what are humans afraid of? Generally, scientific literature focussed its attention on dangerous animals, objects or physical circumstances. For example, Ohman and colleagues (2001), tested differences in the perception of threat of snakes and spiders vs. flowers and mushrooms. However, intuitively, people are also likely to be afraid of certain behaviors displayed by others. Thus, this study aimed at broadening the knowledge in this field, determining which behaviors are commonly perceived as threatening.

Recent studies engaged in testing the correlation between threat perception and compassion (e.g., Cosley et al., 2010; Henshall et al., 2018). According to Cosley and colleagues (2010), individuals who tend to feel more compassion towards others are more sensitive, in terms of receiving support and compassion from others. In line with this proposed compassion flow, when people perceive the context around them as safe and supportive, they tend to feel

less general distress. On the contrary, when people don't perceive protection from others, their threat detection systems are more likely to be activated. However, findings on the correlation between the aforementioned factors are lacking, reason why the current research took both of them into account.

2. METHOD

2.1 RESEARCH OVERVIEW

The present research explores people's reactions to norms transgressions, with a particular focus on the role of dispositional compassion. In the current investigation, two main objectives were set, using compassionate reactions and perception of threat as dependent variables. Firstly, the research aimed at testing the consistency of previous studies on norms transgression, which explored the role of compassion (Lucarini, Fuochi & Voci, *unpublished*). The purpose was to test whether people's compassionate reactions to the suffering of a target are affected by his behavior (positive vs. negative). Consistently with the results of previous studies (Lucarini, Fuochi & Voci, *unpublished*), we predicted that participants would express lower levels of compassionate reactions toward a suffering target when his behavior was negative. Vice versa, greater compassionate reactions were expected when the target behaved positively. The role of dispositional compassion was then taken into account. In general, we hypothesized that higher dispositional compassion would lead to higher compassionate reactions, regardless of the target's behavior (positive vs. negative). In addition, we expected participants with greater levels of dispositional compassion to experience less compassionate reactions when the target violated a care norm. That is, when a target behaves immorally towards others and then is described to be in a state of suffering, he will trigger fewer compassionate reactions.

The second aim of the research was to check whether an individual violating moral norms was perceived as threatening or not. We hypothesized that perception of threat was greater in the experimental conditions in which the target behaved negatively. Furthermore, with regard to dispositional compassion, we expected people with higher levels of dispositional compassion to perceive the target's negative behavior as more threatening than people endorsing lower levels of dispositional compassion.

2.2 SAMPLE

Participants were recruited from the personal contacts list of the research assistant who is charge of this thesis project. The survey was sent via social media platforms, including Instagram and Whatsapp. A snowball sampling technique was also implemented, by asking the participants to forward the survey's link to other contacts.

In total, 180 participants participated on a voluntary basis between the months of December 2021 and January 2022. Amongst these, 55 did not terminate the survey and 5 did not provide post-experiment consent to use their personal data ($N = 120$). Only 6 participants failed the manipulation check items, suggesting that the experimental manipulations used in this study were effective. The final sample ($N = 114$) included 80 female and 34 male participants, whom averaged age was 30.31 years ($SD = 17.24$). In the survey, occupation and education level were also assessed. Concerning occupation, the sample consisted of a wide variety of participants: 67 workers, 38 students, 1 unemployed, 6 retired and 2 homemakers. Such a mixed collection allowed the generalization of data to the overall population avoiding the student sample bias (Meloan, 1993). That is, distortions due to an over-representation of students were prevented. As regards the educational background, the sample presented a relatively high level: 2 participants with lower secondary school qualification, 69 with upper secondary school diploma, 26 bachelor's degrees and 14 master's degrees.

Before starting the questionnaire, participants were asked to self-generate an identification code by using their initials, date of birth and the first letter of their mother's maiden name. The purpose of this code was to check and, in such cases, remove duplicate answers while guaranteeing anonymity. No duplicates were found.

2.3 PROCEDURE

Data for this study were collected using a self-report online questionnaire, which was generated via Qualtrics Software (Qualtrics, Provo, UT). Each participant spent approximately 20 minutes filling out the questionnaire.

The survey was divided into five sections: an introductory part; a short story containing the experimental manipulations; measures of compassionate reactions and perception of threat, together with other correlated variables (which will not be discussed in this thesis project); a measure of dispositional compassion; and, lastly, debriefing and post-experiment informed consent form.

The first section consisted of an introduction to the current research and the collection of demographic data. As a cover story, participants were briefly explained that the research aimed at investigating people's attitudes towards someone facing a difficult situation. Also, they were guaranteed privacy and anonymity according to the latest General Data Protection Regulation (GDPR 679/2016). Once given this information, participants were asked to give a

first consent to proceed with the survey. Further, sociodemographic variables were measured: gender, age, occupation, education level and a self-generated identification code.

In order to measure it at the state-level (rather than at the dispositional level), compassion must be triggered. Thus, before starting the questionnaire, participants were presented with a short (fictitious) story containing the experimental manipulations. As discussed in the previous chapter, compassion is a specific empathic response elicited by the recognition of one's suffering, followed by the desire to act in order to alleviate that suffering (Strauss et al., 2016; Kanov et al., 2006). Consistently with this conceptualisation, the story employed was a piece of news reporting a recent episode of injury at work. Valerio Bertoldo, owner of a construction company, was on site when some heavy beams hit him. To reinforce the perception of his suffering, the article mentioned both the physical and emotional damage he was going through, also reporting Bertoldo's words, in first person. Although fictitious, the episode was passed off as real, in order to make the manipulation more effective: the story was presented as an article of a local newspaper of the Italian city of Brescia. Also graphically, the story was presented as if it was a realistic article, looking like an actual screenshot taken from the newspaper's website, with date, pictures and social media share links.

To test the research hypothesis, a 2 x 2 factorial design was created by manipulating both the target's behavior (either positive or negative; high vs. low valuing) and the moral norm which was salient (care vs. fairness). The four conditions were implemented creating different versions of the story, by changing the circumstances:

- *Low Valuing x Care (LVxC)*: Valerio Bertoldo got injured while his company was building a casino in place of a community center that was described to be an extremely important source of social support for the community. The replacement of such an important gathering point for the city was assumed to be a transgression of the Care norm.
- *High Valuing x Care (HVxC)*: Bertoldo's company was rebuilding a community center –again, presented as an extremely important source of social support for the community– pro-bono, when he got injured. By offering his help to the community, the target proved he cared about others, behaving in line with the Care norm.
- *Low Valuing x Fairness (LVxF)*: to operationalize violation of Fairness norms, the target was presented as acting against the law. Specifically, Bertoldo took advantage of favouritisms and corrupted the administrative committee in order to have his own

company work on the construction of a car parking. He was inspecting the site when he got hurt injured. By transgressing the principles of justice, he was presented as a negative character for the community.

- *High Valuing x Fairness (HVxF)*: Bertoldo was addressed as a moral man who, coherently with fairness norms, had always reported episodes of corruption; he got injured while manually working on site.

Participants were randomly assigned to one of the four different experimental conditions via the Randomizer Qualtrics tool (LVxC = 27, HVxC = 27, LVxF = 32, HVxF = 28). Then, right after reading the passage, they were administered a couple of manipulation check items aimed at testing the effectiveness of the treatments. Participants who failed at any of these items were excluded from the final sample (N = 6).

2.4 MEASURES

Once completed the experimental manipulation section, participants were asked to fill in a series of scales assessing a list of variables of interest. The survey consisted of a series of multiple-choice questions, specifically Likert items and sliders. Some of these variables assessed constructs like state affective and cognitive empathy, helping behaviors, moral emotions etc., and will not be discussed within this thesis project. The variables assessed that are relevant for this thesis' purposes are the following:

- Compassionate reactions: participants were firstly administered 15 items aimed at assessing their levels of compassion towards the target; they were asked to indicate how much they could relate with each item on a 7-point Likert scale ranging from 1 = "not at all" to 7 = "a great extent". Examples of items used are "I realize Valerio Bertoldo is suffering" and "I would like to be there for him during this tough period".
- Perceived threat: we assessed perceived threat for the target's behavior employing the item "How would you judge the target's behaviour?". Responses were given on a slider, going from 0 = "threatening to the society's welfare" to 100 = "beneficial to the society's welfare".
- Compassion scale (CS); Pommier et al., 2020; Italian version by Lucarini et al., 2022): Pommier's scale was provided at the end of the survey to measure participants' dispositional compassion. The CS assesses trait-like compassion as a multidimensional construct, operationalized in four facets: kindness, common humanity, mindfulness and indifference. Participants were asked to express how much they could identify

themselves with each of 16 items on a 5-point Likert scale ranging from 1 = “very rarely” to 5 = “very frequently”. Examples of administered items are: “I think little about the concerns of others” and “When people tell me about their problems, I try to keep a balanced perspective on the situation”.

3. RESULTS

All statistical analyses were carried out using R software (R Core Team, 2021). To reverse score the items that were negatively phrased we used the *car* package (Fox & Weisberg, 2019). The *psych* package (Revelle, 2022) was used to calculate descriptive statistics and Cronbach's Alpha, while the *sjstats* (Lüdtke, 2018) for means, median and standard deviations. The package *emmeans* (Lenth, 2019) was used to calculate the marginal means. Effect sizes were obtained employing the *effsize* package (Torchiano, 2016). Graphs were created with *effects* (Fox & Weisberg, 2019).

3.1 INTERNAL CONSISTENCY

In the first place, we assessed the reliability of the scales employed in this study, by calculating Cronbach's alpha. In order for a scale to be reliable, its items should all measure the same construct. A statistic often used in psycho-social research to test inter-items correlation is Cronbach's alpha. This coefficient analyses the amount of shared variance amongst the items in relation to the overall variance of the scale. Its value can range from 0 to 1: the more it tends towards 1 the greater the internal consistency, vice versa, the more it tends towards 0 the smaller the inter-items agreement. Generally, α values 0.7 are considered as satisfactory (Christmann, 2006).

Before performing this analysis, we had to ensure all items were consistent in their phrasing. Thus, negatively worded questions needed to be reverse scored. Reverse scoring consists in running numerical scoring scales in the opposite direction, in order to allow statistical analyses. In the current investigation, items that were recoded were items 7 and 15 for the compassionate reactions scale, and items 3, 7, 11, and 15 for the Compassion Scale (CS; Pommier et al., 2020).

When testing their internal consistency, the two scales scored respectively $\alpha = .85$ and $\alpha = .81$. The aforementioned results indicated sufficient reliability, which allowed us to proceed with further analyses.

3.2 REPLICATING PREVIOUS STUDIES

3.2.1 COMPASSIONATE REACTIONS

Our first prediction concerned the main effect of the target's past (negative vs. positive) behaviour on compassionate reactions. To determine whether there were any relevant

differences between our experimental conditions, we performed an analysis of variance, specifically a 2 (High vs. Low Valuing) x 2 (Care vs. Fairness) ANOVA, on the dependent variable “compassionate reactions”. The ANOVA test compares the means of different groups to check if they are significantly different from each other. As a parametric test, ANOVA has some assumptions that need to be met:

- Data should be normally distributed and participants should be recruited via a random sampling procedure;
- Variance amongst different groups should be homogeneous, that is, approximately equal;
- Observations should be independent from each other.

Hypothesis tested by the ANOVA are:

- *H0*: there is no statistically significant difference between the groups
- *H1*: there is at least one significant difference among the groups

When the *p*-value in the output is less than .05, null hypothesis can be rejected.

Results from the 2 x 2 ANOVA supported our first prediction. Consistently with previous studies (Lucarini, Fuochi & Voci, *unpublished*), we found a significant main effect of the valuing factor, whereas no significant effect of the moral factor, nor an interaction was found (see Table 1). Since the *p*-value resulted in less than .05, we could reject the null hypothesis. As shown by the marginal means (Table 2) participants assigned to the Low (vs. High) Valuing conditions reported lower levels of compassionate reactions toward the suffering target. Results are also portrayed in Figure 1.

Table 1. 2 (Low vs. High Valuing) X 2 (Care vs. Fairness) ANOVA: on compassionate reactions.

	Sum of Squares	<i>df</i>	Mean square	<i>F</i> value	<i>p</i> -value
Moral	0.04	1	0.040	0.052	0.820
Valuing	19.72	1	19.720	25.812	1.55e-06***
Moral*Valuing	0.20	1	0.203	0.266	0.607

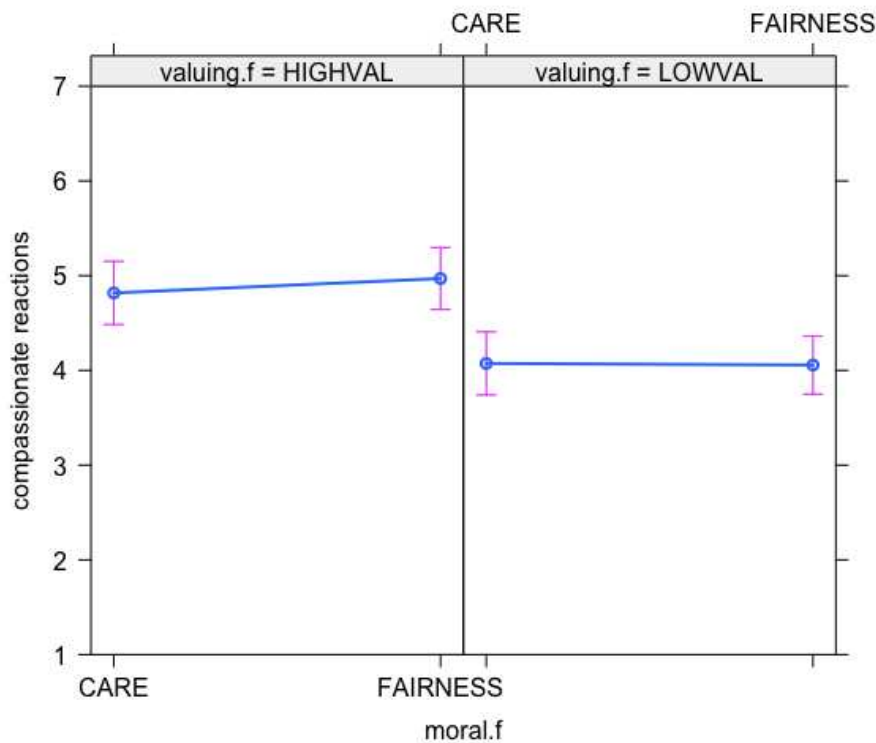
Note. * *p* < .05, ** *p* < .01, *** *p* < .001.

Table 2. Marginal means and standard errors of compassionate reactions.

Moral	Valuing	Marginal means	df	Standard Error
Care	High Valuing	4.82	110	0.168
Fairnes	High Valuing	4.97	110	0.165
Care	Low Valuing	4.07	110	0.168
Fairnes	Low Valuing	4.06	110	0.155

Note. Confidence level used = .95

Figure 1. Effect plot for compassionate reactions.



Importantly, the output of the ANOVA does not specify among which conditions the differences are statistically significant. Thus, we conducted a Tukey multiple comparisons of means as post-hoc test. Tukey’s test compares every possible pair of all groups in order to determine which means differ from the rest. When p-values are found to be less than .05, the difference between the two considered groups is significant. Consistent with the marginal means table, post-hoc comparisons showed that the means were significantly different when Low vs. High valuing conditions were compared, as reported in Table 3. Therefore, results support our prediction that past negative (vs. positive) behavior triggers lower levels of compassionate reactions.

Table 3. Post-Hoc Test: Tukey multiple comparisons of means for compassionate reactions.

	Mean difference	Lower bound	Upper bound	p-value
Fairness x High Valuing*Care x High Valuing	0.1525	-0.4625	0.7676	0.9164
Care x Low Valuing*Care x High Valuing	-0.7439	-1.3645	-0.1233	0.0119
Fairness x Low Valuing*Care x High Valuing	-0.7607	-1.3565	-0.1648	0.0064
Care Low Valuing*Fairness x High Valuing	-0.8964	-1.5114	-0.2814	0.0013
Fairness x Low Valuing*Fairness x High Valuing	-0.9132	-1.5033	-0.3231	0.0006
Fairness x Low Valuing*Care x Low Valuing	-0.0168	-0.6127	0.5791	0.9998

3.2.2 MODERATING ROLE OF DISPOSITIONAL COMPASSION

The next objective was to investigate the role of dispositional compassion. We predicted a main effect of dispositional compassion on compassionate reactions for the target, as well as an interaction effect between dispositional compassion, the valuing and the moral factor. In this case, since dealing with a continuous variable, linear regression analysis was employed. Regression tests are used to examine the influence of one or more independent variables on a dependent variable.

As reported in Table 4, results corroborated the ANOVA previously conducted, as we found a significant main effect of the Valuing factor: participants reported fewer compassionate reactions when the suffering target behaved negatively (vs. positively). Next, our prediction regarding the main effect of dispositional compassion on compassionate reactions was also supported. Regardless of the experimental manipulation, participants endorsing higher levels of dispositional compassion reported greater compassionate reactions for the suffering target. However, inconsistently with previous studies (Lucarini, Fuochi & Voci, *unpublished*), we did not replicate the interaction between our predictors (Moral x Valuing x dispositional

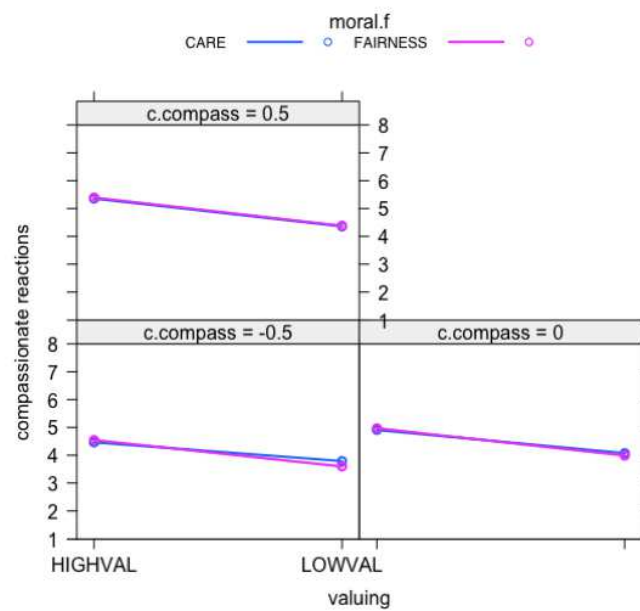
compassion). Thus, our prediction that the transgression of a Care norm (rather than a fairness norm) would provoke fewer reactions in individuals with higher dispositional compassion was not supported. Results of the regression model are portrayed in Figure 2.

Table 4. Linear regression on compassionate reactions.

	Estimate	St. Error	t value	p value
Intercept	4.9093	0.1590	30.872	<2e-16***
Low Valuing	-0.8345	0.2221	-3.756	0.0003***
Fairness	0.0584	0.2202	0.265	0.7913
Compassion	0.8954	0.3419	2.619	0.0101*
Low Valuing*Fairness	-0.1440	0.3065	-0.470	0.6393
Low Valuing*Compassion	-0.3272	0.4875	-0.671	0.5036
Fairness*Compassion	-0.0481	0.4375	-0.110	0.9126
Low Valuing*Fairness*Compassion	0.2617	0.6760	0.387	0.6994

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 2.



Note. Results for participants low (-1SD), medium, and high (+1SD) in dispositional compassion.

3.3 THREAT PERCEPTION

The second purpose of this study was to test whether participants perceived the target behavior as more or less threatening according to the experimental condition they were assigned to. We hypothesized a main effect of the Valuing factor on threat perception. Again, we performed a 2 (High vs. Low Valuing) x 2 (Care vs. Fairness) analysis of variance. Results (Tables 5 and 6, Figure 3) supported our prediction, showing a significant main effect of the Valuing factor. Higher scores indicated fewer threat perceptions. Again, as shown by the marginal means Table, participants assigned to the Low (vs. High) Valuing conditions reported lower scores, meaning that they perceived the target behavior as more threatening. Further, Tukey multiple comparisons of means revealed marginally significant differences between Low Valuing x Care and High Valuing x Care, Low Valuing x Fairness and High Valuing x Fairness, Low Valuing x Care and High Valuing x Fairness conditions. No significant differences were found between the other conditions.

Table 5. 2 (Low vs High Valuing) x 2 (Care vs. Fairness) ANOVA on threat perception.

	Sum of Squares	df	Mean square	F value	p-value
Moral	99	1	99	0.089	0.7665
Valuing	12684	1	12684	11.324	0.0011**
Moral*Valuing	14	1	14	0.013	0.9112

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6. Marginal means and standard errors of threat perception.

Moral	Valuing	Marginal means	df	Standard Error
Care	High Valuing	74.9	89	7.14
Fairnes	High Valuing	76.4	89	6.69
Care	Low Valuing	50.7	89	7.30
Fairnes	Low Valuing	53.8	89	6.69

Note. Confidence level used = .95

Figure 3. Effect plot for threat perception.

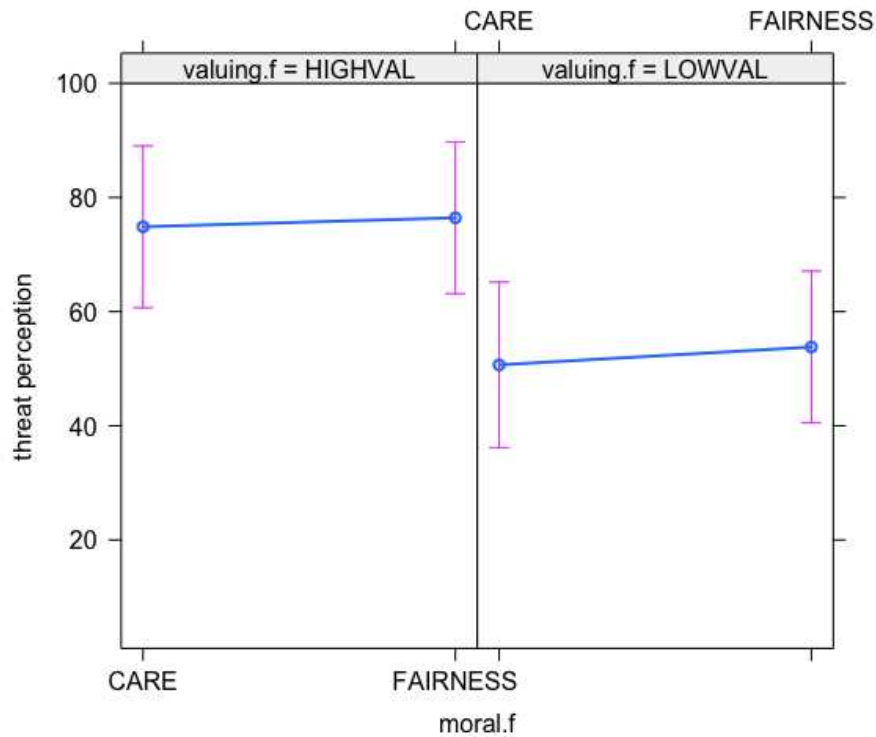


Table 7. Post-Hoc Test: Tukey multiple comparisons of means for threat perception.

	Mean difference	Lower bound	Upper bound	<i>p</i> -value
Fairness x High Valuing*Care x High Valuing	1.5764	-24.0386	27.1913	0.9985
Care x Low Valuing*Care x High Valuing	-24.1970	-50.9295	2.5355	0.0904
Fairness x Low Valuing*Care x High Valuing	-21.0636	-46.6786	4.5513	0.1446
Care x Low Valuing*Fairness x High Valuing	-25.7733	-51.7107	0.1640	0.0521
Fairness x Low Valuing*Fairness x High Valuing	-22.6400	-47.4240	2.1440	0.0860
Fairness x Low Valuing*Care x Low Valuing	3.1333	-22.8040	29.0707	0.9890

3.3.1 DISPOSITIONAL COMPASSION AND THREAT PERCEPTION

The last step of our research was to examine whether there was a difference in dispositional compassion on the perception of threat. Our expectation was that highly compassionate participants would perceive the target's negative behavior as more threatening than others. To check this hypothesis, Welch's t-test was performed.

T-tests compare the means of two independent groups in order to quantify the difference between them. In particular, Welch's t-test assumes that the two groups of data are sampled from normally-distributed populations that do not necessarily have the same variance. Once estimated the t-statistic, null hypothesis can be rejected if its value is larger than the t-critical value. That is, the difference between the two groups is statistically significant.

Before carrying out the t-test, the sample needed to be split into two groups. Firstly, participants were sorted in value order from the lowest to the highest levels of dispositional compassion. Then, the median was calculated ($Mdn = 3.61$). The median is a descriptive statistic that separates the lower from the highest half of the data sample. Participants whose dispositional compassion value was lower than the median were included in the "*low compassion*" group, whereas those who scored higher than the median formed the "*high compassion*" group.

Welch's t-test results disconfirmed our expectations by reporting non-significant differences between participants with low levels of dispositional compassion ($M_{low} = 60.97$, $SD_{low} = 34.90$) and participants with high levels of dispositional compassion ($M_{high} = 66.46$, $SD_{low} = 35.16$), $t(0.75) = 82.39$, $p = 0.46$. Since we failed to reject the null hypothesis, there is no sufficient evidence to say that threat perception felt by the participants varies according to their level of dispositional compassion.

4. DISCUSSION

The present research aimed at investigating people's responses to norms transgressions, specifically in terms of compassionate reactions and threat perception toward a negatively (vs. positively) perceived target. Additionally, we considered the possible moderating role of dispositional compassion. To accomplish this aim, we designed experimental manipulations that could lead participants to place either positive or negative value on an injured individual.

The first objective was to test whether people's compassionate reactions to the suffering of a target vary depending on his negative (vs. positive) behavior. Results supported our initial hypothesis. Consistently with studies previously conducted (e.g., Batson et al., 2007; Lucarini et al., *unpublished*), we found a main effect of the Valuing factor on compassionate reactions: participants reported lower levels of compassion in the Low (vs. High) Valuing conditions. Such results suggest that people have a tendency to tune their compassionate reactions according to their perception of the target. If someone behaves poorly, we are less moved by their suffering and less likely to act in order to ease their pain. Furthermore, both the main effect of dispositional compassion and its interaction with the other independent variables were examined. Results concerning the main effect of dispositional compassion corroborated our predictions, with highly compassionate participants reporting overall greater compassionate reactions. This indicates that some individuals dispositionally tend to show greater concern when exposed to someone's suffering, no matter the circumstances, nor their perception of the target. However, inconsistently with previous research, we did not find an interaction effect between dispositional compassion and the Valuing and Moral factors. We expected fewer compassionate reactions in the Low Valuing x Care condition, due to a much worse consideration of a target who interferes with the well-being of others. Non-significance of this outcome might derive from the restricted size of the sample, which was insufficient to test a three-way interaction. In future research, a greater number of participants could be collected in order to check the replicability of the results reported by previous studies. What's more, other factors could be taken into account as variables influencing participants' self-reported levels of compassionate reactions toward a suffering target. For instance, manipulations can include a young rather than an adult target, who violated moral norms. According to Batson et al. (2005), humans naturally tend to feel more empathy and greater desire to care for the offspring. Thus, the target's age could influence feelings of compassion by inducing greater reactions towards younger individuals, even when they behaved immorally. Alternatively, the suffering transgressor may be presented as a member of the ingroup vs. a member of the outgroup.

Researchers agree that perceived similarity of a target to one's self elicits higher empathic concern (Davis, 2018; Krebs, 1975). As a deduction, greater feelings of compassion might be reported when the violator shares the ethnicity with the sample. Vice versa, fewer compassionate reactions can be expected when the target is a foreigner.

Our second aim was to investigate whether the violation of a moral norm was perceived as a threatening conduct or not. First, we expected a main effect of the Valuing manipulation on threat perception. Data provided evidence for our hypothesis, with participants reporting greater perception of threat in the Low Valuing conditions, that is, when the target behaved immorally. However, no differences were found when comparing the Low Valuing x Fairness and High Valuing x Care conditions (whereas differences were significant between the Low Valuing x Care and High Valuing x Fairness conditions). The particular reason for this unexpected result may be that transgressions of the ethic of justice (e.g., corruption, favoritism) did not evolve as threatening stimuli nor are associated to fearful responses, as such behavior does not imply direct consequences on one's self or on significant others. While, differently, violations of the Care foundation trigger either an inner or conditioned fearful reaction, since they cause direct adverse consequences on individuals.

Next, we hypothesized greater perception of threat at higher levels of dispositional compassion, assuming compassionate individuals as being more sensitive. Yet, data did not support our hypothesis. We found no differences in threat perception of individuals with high vs. low levels of trait-like compassion. This outcome might suggest that our perception of others' behavior as threatening or not does not depend on how compassionate we naturally are. Future studies could rely on broader samples to test this correlation between the aforementioned variables. Moreover, an effect of perception of threat on compassionate reactions could be tested. Particularly, perceiving one's behavior as threatening might inhibit compassionate concern towards his suffering.

Aknowledging that the value we place on people affects our compassionate responses towards them might be beneficial in the interest of increasing certain prosocial actions. In situations of need, results reported in this thesis could be strategically applied in order to guide people's behavior toward a desired direction. For instance, target populations facing humanitarian crisis might be presented as highly valuable when aids and donations are needed.

5. REFERENCES

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