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Empathy or Escape? Examining Alternative Mechanisms Underlying Responses to Disgust-Evoking Charity Appeals Over Time

Deena Kemp 

Stan Richards School of Advertising and Public Relations, Moody College of Communication, The University of Texas at Austin, Austin, Texas, USA

ABSTRACT

Disgust-evoking imagery is often used in charity advertising. Although research suggests disgust has negative effects on prosocial behavior, few studies examine charity appeals. The current two-factor, between-participants experiment compared immediate and delayed responses to disgust versus nondisgust appeals. Immediately following exposure, disgust reduced self-reported message attention and empathy. Yet participants exposed to disgust anticipated greater difficulty forgetting the message, which motivated immediate giving, and they reported thinking about the message more following exposure, which motivated delayed giving. Empathy remained relatively stable under disgust, exceeding the comparison condition over time. Results suggest a nuanced process whereby disgust affects charitable behavior.

Introduction

Charity advertisements use a variety of emotional appeals to motivate support for social causes. Yet the effect of discrete emotional messages has been noted as an understudied aspect of this line of research (Hudson et al. 2016). The emotion of disgust, though frequently used in charity appeals, has received limited examination in charity appeal research. Disgust imagery has been used to encourage charitable support for social issues like animal rights, environmental justice, and health disparities. Charities such as People for the Ethical Treatment of Animals (PETA) have run ads showing skinless, bloody animals that have been killed for their fur and reptile-skin handbags that open to expose internal organs. Likewise, ads for Greenpeace have featured images of decaying garbage in the ocean and dead birds cut open to show their plastic-filled stomachs. The Sabin Vaccine Institute's campaign to raise funds for the treatment of neglected tropical diseases (NTDs) featured explicitly grotesque images of people with parasites like the hookworm crawling out of their mouths. All of these appeals feature elements of disease, decay, and deformity known to evoke disgust, which can be defined as "grossed-out" reactions in viewers (Nabi 2002).

Some scholars suggest that disgust-evoking charity images signal the grim nature of an issue and the dire need of beneficiaries, which trigger empathetic responses even as they induce a stomach-wrenching urge to look away (Strohming 2014). Indeed, one of the first studies to examine the use of disgust-evoking charity appeals found disgust increased empathy; yet that study also found exposure to the disgust appeal reduced giving intentions (Allred and Amos 2018). Furthermore, in a recent series of studies, Chan and Septianto (2022) repeatedly found

that evoking disgust reduced empathy. These latter findings are consistent with thinking among another group of scholars that argues the emotion of disgust is not suitable for prosocial persuasion because it diminishes our concern for others (Kelly and Morar 2014; Pizarro, Detweiler-Bedell, and Bloom 2004). However, Chan and Septianto (2022) also found that when disgust was used in a charity appeal focused on the self, rather than others, participants gave more. Their discovery suggests that disgust can have positive effects on charitable behavior and that motivating factors beyond empathy should be considered.

The current study extends this prior research by considering the potential for psychological escape, an alternative helping motivator (Stocks, Lishner, and Decker 2009), to explain the relationship between disgust and charitable giving. A dual pathway of effects, in which disgust has a negative effect via empathy and a positive effect via anticipated difficulty of psychological escape, is proposed. The current study also considers the effect of time and whether requesting a charitable donation immediately or after a delay following message exposure shifts these processing effects over time. While there is evidence that delaying donation requests reduces giving (Chuan, Kessler, and Milkman 2018), existing studies have accounted for neither discrete emotional appeals nor the role of experienced difficulty of psychological escape in influencing future donation behavior. The results of this study further understanding of how disgust may motivate charitable behavior and points to potential benefits and drawbacks that should be considered when crafting charitable appeals that evoke the emotion of disgust.

Literature review

Functional emotion theory, disgust, and persuasion

Emotions can generally be defined as evaluations of relevant events in our environment characterized by physiological arousal and subjective feeling states (Nabi 2019). Functional theories of emotion posit that emotions serve to coordinate our thoughts and motivate behavior in response to these events (Frijda 1986; Lazarus 1991). In this view, the emotions we experience when we encounter relevant objects or stimuli help us gather mental and physical resources to respond in ways consistent with the goal of each emotion (Nabi 1999). Emotions that are triggered by specific events or stimuli and involve distinct cognitions and action tendencies have been labeled as discrete emotions (Roseman, Wiest, and Swartz 1994). As a discrete emotion, disgust is a feeling of visceral repulsion in response to spoiled, unpleasant objects in our environment (Rozin, Haidt, and McCauley 1993). Depictions of deformity and decay, bodily organs and fluids, extreme sickness, and pathogens that cause disease have reliably been shown to elicit disgust (Haidt, McCauley, and Rozin 1994). In terms of action tendencies, disgust drives us to avoid and reject objects we encounter that elicit the emotion (Izard 1977; Lazarus 1991). This may include efforts to shut out or avoid having to perceive such objects. While this rejection response is useful for avoiding physical contaminants, such as rotten food, it may extend to other objects, ideas, and even people that become psychologically contaminated through association with a disgust elicitor (Rozin, Millman, and Nemeroff 1986).

Negative emotions are commonly used in persuasive messages to motivate positive behaviors. For instance, fear is often used to promote health behaviors and guilt is often used to promote charitable behaviors (Renner et al. 2013; Witte and Allen 2000). Disgust is distinct from other negative emotions like guilt and fear both in the range of stimuli that evoke the emotion and in the subjective feelings, thought patterns, and behavioral drives experienced in response. Guilt is evoked by one's violation of a moral or ethical principle and motivates action to repair or right a wrong (Nabi 2014). Fear is evoked by highly probable and severe threats to oneself and motivates protective responses (Dillard and Nabi 2006). Because disgust motivates us to reject contaminated objects, it is particularly useful for enhancing fear (Morales, Wu, and Fitzsimons 2012). Exposure to disgust elicitors has been linked to motivation to avoid risky behaviors, such as alcohol and tobacco use, or to engage in behaviors that avoid unhealthy consequences, such

as wearing sunscreen to prevent skin cancer or engaging in safe sexual practices to prevent sexually transmitted diseases (Clayton et al. 2017; Collymore and McDermott 2016; Tybur et al. 2011).

However, when disgust is associated with objects that do not pose a threat to oneself, it may lead to rejection of the positive, beneficial behaviors a persuasive message seeks to encourage. For instance, disgust may interfere with sales promotion efforts where the goal is to persuade people to engage in, rather than avoid, consumption behavior (Morales and Fitzsimons 2007). Studies show employing disgust in consumer advertising results in unfavorable attitudes toward the ads (Dens, De Pelsmacker, and Janssens 2008), diminished likelihood of visiting a business, and reduced purchase intentions (Shimp and Stuart 2004). These responses may be due to incongruency between disgust and the goal of the message in addition to feelings that the disgust-evoking content is inappropriate or offensive (Dens, De Pelsmacker, and Janssens 2008; Shimp and Stuart 2004).

Audiences may be more forgiving of the use of disgust imagery in nonprofit advertising, including charitable appeals, than in for-profit brand appeals (Parry et al. 2013). Yet similar consequences have also been noted in charitable giving contexts in the form of reduced organ donation intentions, decreased willingness to volunteer, and lower monetary aid (Allred and Amos 2018; Chan and Septianto 2022; Mazur and Gormsen 2020). Findings so far are mixed as to why disgust may reduce helping, but one viable explanation is that feelings of disgust lower feelings of empathy, which in turn diminishes aid (Chan and Septianto 2022).

Negative effects via reduced empathy

Empathy and disgust have been described as serving opposite functions when it comes to moral thoughts and actions, including prosocial behavior (Pizarro, Detweiler-Bedell, and Bloom 2004). Empathy involves considering another's need and feeling care and concern for that person as a result (Batson et al. 2002). It has long been recognized as a motivator of charity (Batson et al. 1981). When people experience empathy in response to another's need, they are more likely to provide support.

In contrast, research on the role of disgust in moral reasoning suggests that disgust diminishes our consideration for others (Pizarro, Detweiler-Bedell, and Bloom 2004). Feelings of disgust have been linked to dehumanization—the denial of internal mental states and attribution of animal characteristics—toward others (Buckels and Trapnell 2013). Research has also shown that people exposed to disgust elicitors express greater implicit bias and moral condemnation toward a target social out-group (Dasgupta et al. 2009; Inbar, Pizarro, and Bloom 2012; Wheatley and Haidt 2005; compare Landy and Goodwin 2015). Furthermore, neuroscience evidence suggests that when we feel disgust our thoughts about other people are diminished as evidenced by reduced activity in the medial prefrontal cortex (Harris and Fiske 2006). Because disgust functions to protect us from contamination, these dehumanizing responses can be seen as drawing a boundary between us and others to avoid “infection.”

Much of the research on disgust and moral reasoning involves incidental disgust primes (e.g., dirty toilets, sounds of vomiting) that are irrelevant to the target of evaluation. However, findings from recent charity appeal studies, where disgust is a relevant part of the message, suggest negative reactions for integral disgust too. Based on the extant theory and empirical research described, it is reasonable to expect that participants exposed to disgust in a charity appeal will be less willing to consider the issue further in keeping with the emotion's immediate rejection response. Likewise, participants exposed to disgust should also feel less empathy than those viewing ads that do not evoke disgust. Reductions in empathy should, in turn, negatively impact giving immediately following exposure.

H1: Immediately following exposure, participants exposed to disgust will express lower motivation to consider the message.

H2: Immediately following exposure, participants exposed to disgust will express lower feelings of empathy in response to the message.

H3: Immediately following exposure, participants exposed to disgust will give less money.

Alternative pathways: Positive effects via psychological escape

While it is important to consider empathy as a response to disgust-evoking charity appeals, it should be noted that empathy is only one mechanism through which giving may be motivated. People may experience other psychological evaluations, in addition to empathetic responses, that serve as alternative motivators of prosocial behavior. These alternative motivators may include egoistic motives such as providing aid to gain a reward, avoid punishment, or bolster one's reputation (Batson and Shaw 1991; Bekkers and Wiepking 2011). People are also more likely to intervene when they perceive that it is difficult to escape the helping situation either physically or psychologically (Batson et al. 1981; Fultz, Schaller, and Cialdini 1988). Physical escape refers to the ability to remove oneself from the situation, such as leaving the room or changing the channel. When people are otherwise unmotivated to help but cannot remove themselves, they are more likely to help as a means of reducing the personal distress of witnessing another's need (Batson et al. 1981). Psychological escape refers to the ease or difficulty of forgetting the helping situation once one is no longer physically exposed to it. Researchers have examined the effects of manipulating psychological escape, such as telling participants a training technique would permanently "save" or "delete" their memory of a person in need (Stocks, Lishner, and Decker 2009). Participants who expect to remember the situation are more likely to offer help. The more difficult it is to escape or forget, the more individuals are predicted to provide help (Stocks, Lopez-Perez, and Oceja 2017).

Despite motivating people to "shut off" perception, there is evidence that individuals recall disgust stimuli better than they recall other emotional stimuli (Chapman et al. 2013; Charash and McKay 2002). Some scholars describe a paradox of disgust in that it may simultaneously motivate us to terminate contact with the disgust elicitor, to avoid having to perceive it, while at the same time capturing our attention such that we are unable to shut it out of consciousness (Herz 2012; Joffe 2008). This rubber-band effect may have important implications when the emotion is used as an integral part of charity appeals. People may not expect to easily forget a disgust-evoking charity appeal.¹ If disgust-evoking ads increase perception that psychological escape is difficult, this may, in turn, positively influence giving behavior immediately following message exposure.

In light of the preceding discussion, a dual pathway of effects for disgust is proposed. The following hypotheses predict that, despite reducing empathy, disgust may simultaneously increase difficulty of psychological escape. Mediation effects are also anticipated, with pathways to giving through reduced empathy, as well as through increased difficulty of psychological escape, immediately following exposure to the message.

H4: Immediately following exposure, participants exposed to disgust will anticipate greater difficulty of psychological escape.

H5: Both empathy and psychological escape will mediate the effect of disgust, with opposing effects on donation amount, immediately following exposure.

Sustaining recall and mitigating empathy loss over time

The concept of psychological escape allows for continued recall of a need situation over time. That is, individuals may not only anticipate difficulty of escape but also actually experience ongoing thoughts about the situation (Stocks, Lopez-Perez, and Oceja 2017). Theoretically, providing help in the present may help alleviate the potential for lingering future thoughts, assuming

an immediate means of giving aid is available (Batson et al. 1981). When individuals do not have an immediate means to provide support, one of several outcomes may occur. They may think about, or forget, the situation as they anticipated; they may anticipate remembering only to forget; or they may anticipate forgetting only to remember (Stocks, Lopez-Perez, and Oceja 2017). Other evaluations of the helping situation may shift dynamically over time as well (Carrera et al. 2013). For instance, feelings of empathy and willingness to provide help may be different after some time from feelings immediately following exposure to a charity appeal.

In addition to understanding the immediate effects of disgust-evoking charity appeals on persuasive outcomes, the current study is also interested in identifying potential delayed effects. In doing so, it draws on the sleeper-effect hypothesis to propose improved persuasive outcomes over time. Although it is expected to observe persuasive effects closely following exposure to a message and for effects to dissipate over time, the sleeper-effect hypothesis posits that it is also possible to observe increased or sustained persuasion over time (Hovland, Lumsdaine, and Sheffield 1949; Pratkanis et al. 1988). Delayed effects may occur as the influence of message rejection cues dissipate while message acceptance cues remain stable or increase. Research has distinguished between absolute sleeper effects, where initially discounted messages increase in persuasive effect over time, and relative sleeper effects, where initially discounted messages have a sustained effect mitigating persuasive decay (Kumkale and Albarracín 2004).

The role of emotions in generating the sleeper effect is not widely studied and, as a result, not well understood (Konijn and Holt 2010). Some scholars have proposed that emotionally charged content may be prone to sleeper effects because emotion facilitates future recall and emotionally charged information is more vivid and accessible, though it may require more time to process (Brosius 1993; Jensen et al. 2011). The potential of humor to produce a sleeper effect has received the most attention in this regard. Nabi, Moyer-Guse, and Byrne (2007) suggest humor is initially a discounting cue leading audiences to dismiss a message as a joke, but humor also facilitates remembering the information, increasing its influence over time. Individual studies have both supported and refuted this hypothesis, but a meta-analysis of humor appeals showed no significant effects of delays of only a few days or a few weeks (Walter et al. 2018). However, one study examining delayed effects of guilt appeals found that anticipatory guilt increased self-reported recycling behavior three days following message exposure (Antonetti, Baines, and Jain 2018).

Disgust has been described as sticking in the mind (Joffe 2008). While the rejection response ascribed to disgust may serve as a discounting cue, leading to reduced empathy and giving, its ability to both repel and capture attention may result in improved delayed effects. Specifically, disgust may allow for greater experienced difficulty of psychological escape following message exposure. Furthermore, levels of empathy may remain stable for those exposed to disgust imagery while decreasing for those exposed to the control images (relative sleeper effect) due to continued thinking about the issue. Given that emotional experiences dissipate with time, from within a few minutes to several days (Verduyn, Tuerlinckx, and Van Gorp 2013), this effect seems more likely. Alternatively, distance from repelling features of the disgust message may allow for evoked feelings of compassion to increase (i.e., absolute sleeper effect). Regardless, if either scenario occurs, over time disgust-eliciting messages may result in greater levels of message processing and higher levels of empathy, which in turn may improve giving behavior. In other words, although exposure to the control appeal is expected to result in greater effects immediately following exposure, these effects may dissipate more quickly such that participants exposed to the disgust appeal show higher levels of persuasion over time.

H6: Following a delay, participants exposed to disgust will report experiencing greater difficulty of psychological escape.

H7: Differences in empathy measured immediately and following a delay will be smaller for participants exposed to disgust.

H8: Following a delay, participants exposed to disgust will report greater levels of empathy.

H9: Following a delay, participants exposed to disgust will give more money.

H10: Exposure to disgust will result in greater experienced difficulty of psychological escape, which in turn will lead to greater empathy over time and positively mediate the effect of disgust exposure on donation amount.

Methods

Study design

This study employs a two-factor, between-participants experimental design varying exposure to a disgust or a control (nondisgust) message and varying the timing of the donation request to occur immediately or following a delay after exposure. Participants were randomly assigned to one of the four conditions.

Stimuli

There were five full-color images in both the disgust and control conditions. Ad copy describing the issue, including an appeal for help, accompanied each image. Both the disgust and control images were selected based on features frequently used in charitable behavior studies, such as the depiction of faces, children, and single individuals (Jenni and Loewenstein 1997). Images of children with NTDs were selected as the disgust-evoking stimuli, given that NTDs are a target issue for charitable campaigns and the visual depictions of both their causes (e.g., parasites such as hookworms or flies) and effects (e.g., physical deformity, open sores) can be quite gruesome. The children in the control condition, who had no symptoms, appeared healthy and happy. To reduce potential biases related to portraying children of a single gender, race, or ethnicity, images of both boys and girls were included in the stimuli, as were images of children of different ethnic backgrounds. For consistency, children of the same gender and ethnicity appeared alongside the same ad copy in both the disgust and control conditions. For instance, in both conditions, the copy describing the prevalence of NTDs was accompanied by an image of a boy of Asian descent. Other than varying emotional content of the images, the layout and copy were consistent across conditions.

Stimuli pretesting

The stimuli were pretested to ensure that the set of disgust images selected evoked greater levels of disgust than the images selected for the control condition. Pretest participants ($n=60$) were similar in age and ethnicity to those recruited for the main study. The pretest employed a between-participants design where participants were randomly assigned to one of the two experimental conditions. Because the stimuli were set up to resemble an appeal with ad copy following a narrative, the order of images was not randomized. After viewing the message, participants indicated how much disgust they experienced using the English version of the Ekel–State–Fragebogen disgust scale (Bates and Chadwick 2015), which measures both the subjective (e.g., “I felt grossed out”) and physiological (e.g., “My stomach churned”) components of disgust. Items were measured on 5-point scales ranging from 1 = *Not at all* to 5 = *A great deal* ($\alpha = .97$; $M=2.22$, $SD=1.23$). Results of an independent samples t test show mean ratings for the disgust images ($M=3.66$, $SD=0.95$) were significantly higher than the ratings for the control images ($M=1.43$, $SD=0.42$), $t(24.68) = 9.44$, $p < .001$.

Participants

Eligible participants were adults 25 and older living in the United States who were not enrolled in an undergraduate degree program at the time of the study. Use of a nonstudent sample is

important because student samples are often homogenous in terms of age, education, and income—all of which have significant associations with giving behavior (Bekkers 2010). To determine sample size, a power analysis was conducted allowing for small effects, particularly for giving behavior ($\alpha = .05$, power = .80, ES $f = .15$); results suggested recruiting 115 participants per condition. In addition, participants were slightly oversampled in the delayed conditions to counteract the potential for attrition between each study wave. Participants were recruited via Prolific Academic (Peer et al. 2017) and received \$1.85 for each wave of the study in which they participated (in addition to the \$5 allotted for the behavioral measure; see Procedure section).

Several responses were excluded from analyses: two participants were inadvertently exposed to both message treatments; two additional participants did not provide any responses after seeing the stimuli; despite screening criteria, one participant indicated age under 18; and one participant's response identity could not be verified for payment. Figure 1 shows the randomization of the remaining eligible participants to each experimental condition.

The final sample ($n = 495$) was predominantly Caucasian (82 percent) with a nearly even distribution of males (51 percent) and females (48.6 percent). Half of the sample are between the age of 25 and 34 (50 percent). The majority report attaining a four-year college degree or higher level of education (59.8 percent) and were employed either part time or full time (77 percent). Slightly more than half participants (53.1 percent) reported annual household incomes of \$50,000 or more.

Participants largely qualify as an unaware audience. Only 26.4 percent had heard about NTDs prior to taking the study. Of those who had prior knowledge, only 38 participants reported having or knowing someone who had an NTD at any time in the past; 13 participants reported feeling personally at risk for contracting an NTD.

Procedure

Study procedures received approval from Cornell University's institutional review board (ID 1712007683). The experiment was conducted online; informed consent was administered electronically. Participants were told the study was about a health issue. At the start, all participants were told they had been selected to answer additional questions and would receive \$5 more for the extra time. In actuality, there were no additional questions. This step was included to convince participants they were earning the additional money and minimize the potential for windfall giving (Cherry, Frykblom, and Shogren 2002). Participants then viewed the message stimuli.

Following exposure to the stimuli, participants completed the questionnaire with measures of the dependent variables. Participants in the immediate condition also completed the behavioral

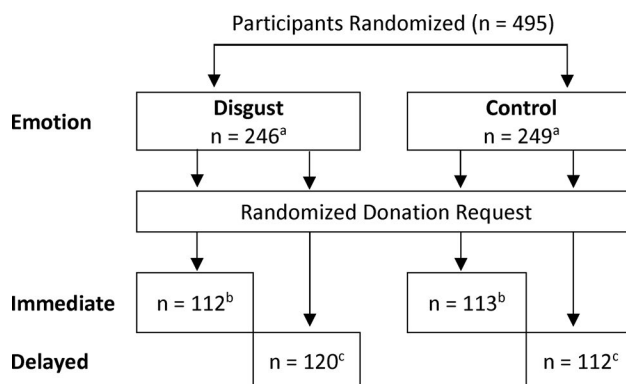


Figure 1. Participant randomization to each experimental condition. ^aViewed each stimuli and completed initial posttest (oversampled participants in the delayed conditions); ^bCompleted immediate giving task; ^cCompleted delayed giving task (accounts for attrition).

measure (donation task) at this time. Participants in the delayed condition were contacted again three days later to complete the second part of the study including the behavioral task. This time period was chosen based on evidence that memories of emotional events fade over time (Levine and Safer 2002). Three days should allow for recall of the message while not being so short as to make potential shifts in message outcomes unobservable. Attrition was low: 86.2 percent of participants assigned to the delayed condition completed the study. There were no significant differences in attrition between the disgust and control conditions. Participants were debriefed at the end of the time period in which they completed the study.

Dependent measures

Issue consideration. Motivation to consider the issue was measured with a single item: “When you were viewing the content, to what extent did you try to consider the issue further or try to shut it out?” Response options ranged from 1 = *Completely shut it out* to 11 = *Completely considered it further* ($M = 8.13$, $SD = 2.57$).

Empathy. Empathetic concern (Batson 1989) was measured using six items, *Sympathetic*, *Softhearted*, *Compassionate*, *Moved*, *Tender*, and *Warm*, rated from 1 = *Not at all* to 7 = *Extremely*. Items were summed and averaged to create a single empathetic concern index for Time 1 ($\alpha = .93$; $M = 4.93$, $SD = 1.60$) and Time 2 ($\alpha = .96$; $M = 4.06$, $SD = 1.75$).

Psychological escape. Anticipated difficulty of psychological escape was measured with two items—“How memorable was the content?” and “How much did you anticipate thinking about it?” (adapted from Stocks, Lishner, and Decker 2009)—plus an additional item asking how easily participants anticipated forgetting what they saw. Items were measured on 9-point scales, with the final item reverse-coded so higher numbers indicate greater difficulty of psychological escape ($\alpha = .81$; $M = 6.05$, $SD = 1.88$). The previous questions were answered immediately following exposure.

Experienced difficulty of psychological escape was also measured in the delayed condition with two items: “How frequently did you think about the issue and children portrayed?” and “How easily did you forget about the issue between taking part 1 of the study and now?” Participants also indicated their level of agreement with this statement: “I am only thinking about the issue again because of this follow-up study.” The latter two items were reverse-coded before an index measure was computed ($\alpha = .87$; $M = 4.21$, $SD = 1.94$). Items were measured on 9-point scales such that higher numbers indicate greater thinking about the issue following exposure.

Donation amount. Participants received additional compensation, as previously described, ostensibly for answering additional questions. Later in the study, participants were asked whether they wanted to donate their study earnings to The End Fund, an actual charitable organization that works to eradicate NTDs (note: all donations were sent to the charity). Participants could indicate how much of their earnings they would like to donate or choose not to donate at all. Giving was treated as count data, expressed as an integer in cents (range: 0 to 500; $M_i = 144.25$, $SD = 181.85$; $M_d = 107.60$, $SD = 161.40$). As is common with count data, responses were positively skewed in both the immediate (0.97) and delayed (1.32) conditions.

Covariates. Gender was included as a covariate based on potential between-sex differences in disgust sensitivity (Rohrmann, Hopp, and Quirin 2008). A trait altruism measure was also included to control for natural inclinations to behavior charitably. Three items from the Altruistic Personality Scale (Rushton, Chrisjohn, and Fekken 1981) measured how frequently participants volunteer or donate money or clothing on a 7-point scale ($\alpha = .83$; $M = 4.53$, $SD = 1.11$).

Analytical Procedure. Data were analyzed with SPSS Version 26 and Stata Version 15 statistical software packages. Analysis of covariance tests were conducted to determine if there were significant mean

differences between conditions for each of the dependent variables, with the exception of giving outcomes, which were analyzed with regression models; this includes the count data models analyzed using the zero-inflated negative binomial function in Stata. Covariates were included in all models.

Results

Table 1 provides descriptive statistics for each of the dependent variables by experimental condition. Table 2 provides a summary of the study hypotheses, and states whether they were supported or not.

Negative effects of disgust

The first set of hypotheses predicted negative effects of disgust portrayals immediately following exposure relative to the effects of the control condition.

Hypothesis 1 predicted exposure to disgust would decrease motivation to consider the issue further compared to participants in the control condition. This hypothesis was supported, $F(1, 488) = 23.04$, $p < .001$. Participants in the disgust condition reported considering the message less ($M = 7.62$, $SD = 2.72$) than those in the control condition ($M = 8.64$, $SD = 2.30$).

Hypothesis 2 predicted exposure to disgust would decrease empathy immediately following exposure to the message compared to participants in the control condition. This hypothesis was also supported, $F(1, 488) = 4.76$, $p = .029$. Participants in the disgust condition reported lower levels of empathy ($M = 4.79$, $SD = 1.67$) than participants in the control condition ($M = 5.06$, $SD = 1.51$, $p = .03$).

Hypothesis 3 predicted participants exposed to the disgust condition would give less than participants exposed to the control condition. Inspection of the immediate donation data showed 49 percent of participants did not give, resulting in a disproportionate number of zeros for this variable. Further, the variance was significantly greater than the mean, indicating overdispersion of the data. Thus, a zero-inflated negative binomial regression model was used to test this hypothesis (Hilbe 2011). There were no significant differences in the amount of money participants in the disgust condition donated compared to participants in the control condition ($p = .386$). Hypothesis 3 was not supported.

Table 1. Dependent variable descriptive statistics with mean and standard deviation.

Group	Immediate, <i>M</i> (<i>SD</i>)				Delayed, <i>M</i> (<i>SD</i>)		
	Issue Consideration	Empathy	Psych Escape ^a	Donation in Cents	Empathy	Psych Escape ^b	Donation in Cents
Disgust	7.62 (2.72)	4.79 (1.67)	6.72 (1.61)	149.56 (189.98)	4.43 (1.70)	4.69 (1.94)	116.50 (166.70)
Control	8.64 (2.30)	5.06 (1.51)	5.40 (1.90)	138.94 (174.07)	3.67 (1.73)	3.70 (1.81)	98.90 (157.17)

^aPsychological escape refers to the extent to which participants perceive it will be easy or difficult to forget the message regardless of whether they have a strong (or weak) desire to avoid it; higher numbers indicate greater difficulty of escape.

^bExperienced psychological escape.

Table 2. Summary of study hypotheses and findings.

Hypothesis	Prediction	Finding
1	Disgust reduces motivation to consider message	Supported
2	Disgust reduces empathy	Supported
3	Disgust reduces donation amount	Not supported
4	Disgust increases anticipated psychological escape	Supported
5	Empathy and psychological escape have opposite mediation effects on immediate donation amount	Partially supported
6	Disgust minimizes empathy loss over time	Supported
7	Empathy higher under disgust in delayed condition	Supported
8	Experienced psychological escape higher under disgust in delayed condition	Supported
9	Disgust increases donation amount over time	Not supported
10	Experienced psychological escape results in greater empathy and donation amounts over time	Partially supported

Positive effects of disgust

Whereas hypotheses 1, 2, and 3 predicted negative effects of disgust immediately following exposure, hypotheses 4 and 5 predicted positive effects of disgust immediately following exposure. Hypothesis 4 addressed a potential paradox of disgust, and apparent contradiction to hypothesis 1, that although participants in the disgust condition would report considering the message less, they would also anticipate greater difficulty escaping or forgetting the issue. Hypothesis 4 was supported, $F(1, 488) = 74.65$, $p < .001$. Participants in the disgust condition expected to have greater difficulty forgetting the message ($M = 6.72$, $SD = 1.61$) than participants in the control condition ($M = 5.40$, $SD = 1.90$, $p < .001$).

Hypothesis 5 predicted empathy would be a negative mediator and anticipated psychological escape would be a positive mediator of the relationship between exposure to the disgust condition and giving behavior immediately following exposure. Model 6 of the PROCESS macro for SPSS (Hayes 2018) with 5,000 bias-corrected bootstrapped samples (95% confidence interval [CI]) was used to test this hypothesis. The disgust condition was coded as the predictor variable with the control condition as the comparison group. Empathy and anticipated psychological escape were included as mediators. The overall model was significant ($R^2 = .10$, $p < .001$). As shown in Figure 2, there were no direct effects of disgust exposure on donation amount. There was a significant positive indirect effect via psychological escape (effect = 24.66, $SE = 8.75$; CI: 9.73–42.97); the total effect was also significant (effect = 23.09, $SE = 10.20$; CI: 3.46–43.48), partially supporting hypothesis 5. However, neither the indirect effect of empathy nor the serial mediation effect through psychological escape and empathy on donation amount was significant (i.e., CIs include zero).

Effects over time

The final hypotheses examine participants' delayed responses to disgust-evoking messages ($n = 269$). Consistent with hypothesis 4, which predicted greater anticipated difficulty of psychological escape, hypothesis 6 predicted greater experienced difficulty of psychological escape. This hypothesis was supported, $F(1, 228) = 15.20$, $p < .001$. Participants in the disgust condition reported thinking about the issue more in the days following exposure ($M = 4.69$, $SD = 1.94$) than those in the control condition ($M = 3.70$, $SD = 1.81$, $p < .001$).

Hypothesis 7, which predicted that exposure to the disgust condition would reduce differences in empathy over time, was also supported, $F(1, 230) = 17.96$, $p < .001$. To test this hypothesis a new variable was computed by subtracting empathy scores reported after the delay from those reported immediately following exposure for each participant. Although participants in both conditions report lower levels of empathy after the delay than immediately following exposure, the difference in empathy between the two periods was significantly smaller

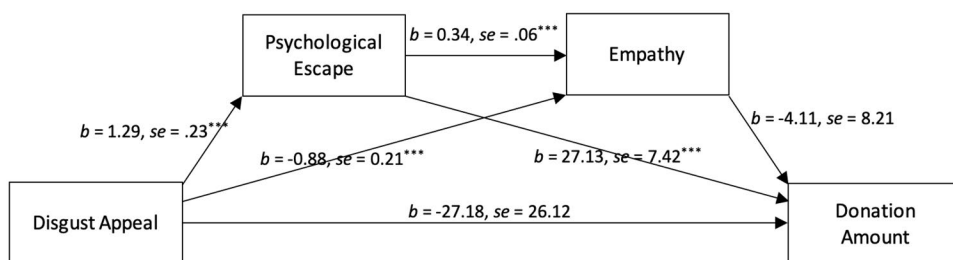


Figure 2. Serial mediation model for immediate donation. Disgust condition is the predictor compared to the control condition with psychological escape and empathy as the mediators along with covariate variables. ($n = 225$); * $p < .05$; ** $p < .01$; *** $p < .001$.

for participants in the disgust condition ($M_{\text{dif}} = 0.44$, $SD = 1.38$) compared to the control condition ($M_{\text{dif}} = 1.28$, $SD = 1.75$).

Hypothesis 8, which predicted participants in the disgust condition would report greater empathy compared to participants in the control condition after the delay, was supported, $F(1, 228) = 10.68$, $p = .001$. Results show that participants in the disgust condition reported greater levels of empathy following the delay ($M = 4.43$, $SD = 1.70$) compared to those in the control condition ($M = 3.67$, $SD = 1.73$). The differences in difficulty of psychological escape and empathy from Time 1 to Time 2 are illustrated in Figure 3.

Hypothesis 9 predicted that giving would be higher among participants in the delayed disgust condition. To control for the effect of the timing of the donation request, a single donation variable with responses for both the immediate and delayed conditions was the outcome variable. The giving data were overdispersed with a large number of zeros (60 percent of participants in the delayed condition did not give; overall, 54 percent did not give), so a zero-inflated negative binomial regression model was used again. The model examined the direct effect of the disgust manipulation and time of the ask as well as their interaction effects. Although the logit (inflation) model, shows that participants were more likely to give immediately following exposure regardless of condition ($p = .022$), there were no significant differences in the amount of money participants in the disgust and control conditions donated ($p = .389$). The interaction of disgust (versus control) and immediate (versus delayed) conditions was also not significant ($p = .329$). Hypothesis 9 is not supported.

Hypothesis 10 predicted that experienced difficulty of psychological escape following exposure to the disgust appeal accounts for sustained empathy over time, leading to increased donation amounts. This serial mediation hypothesis was tested using Hayes's PROCESS Model 6 with 5,000 bias-corrected bootstrapped samples (95% CI). The disgust condition was coded as the predictor variable, with the control condition as the comparison group. Psychological escape and empathy were the mediators. Although the overall model was significant ($R^2 = .11$, $p < .001$), the path analyses do not support a serial mediation model. Parallel mediation through empathy was also not supported. Instead, as shown in Figure 3, any effect of disgust exposure on giving is mediated solely through increased thinking about the issue over time (effect = 13.83, $SE = 8.07$; CI: 0.78–32.49); the total effect was also significant (effect = 21.84, $SE = 8.73$; CI: 7.22–41.40). The mediation results also support the view that experienced psychological escape accounts for sustained empathy (effect = 0.40, $SE = 0.12$; CI: 0.17–0.66) as suggested by the respective paths in Figure 4. Hypothesis 10 is partially supported.

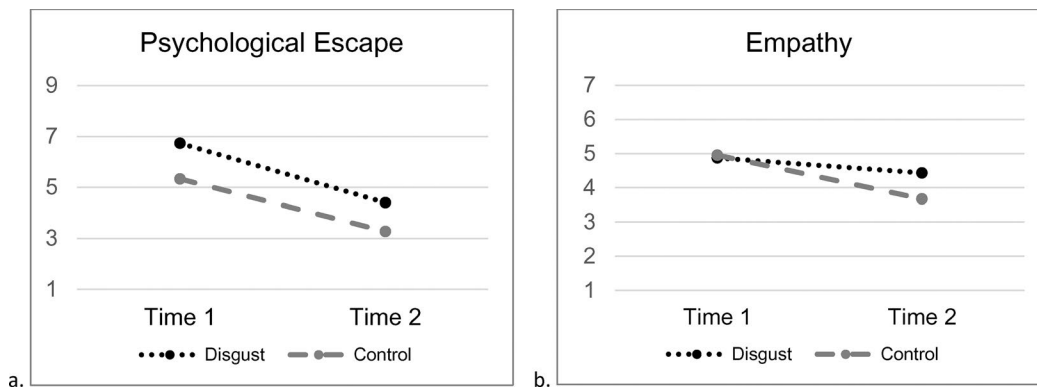


Figure 3. Changes in psychological escape and empathy over time. Similar rate of change between anticipated and experienced difficulty of forgetting the message (a) but a relative sleeper effect of disgust on changes in empathy (b).

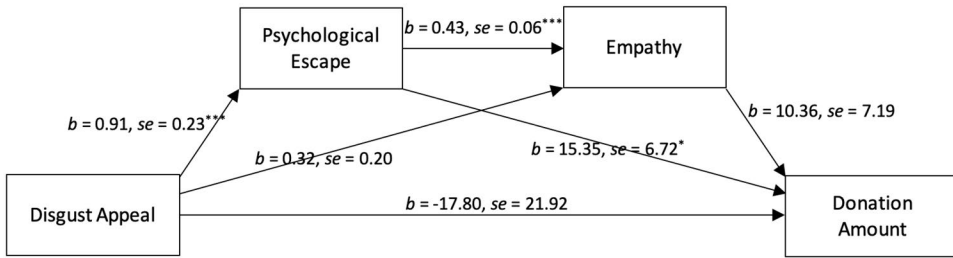


Figure 4. Serial mediation model for delayed donation. Disgust condition is the predictor compared to the control condition with psychological escape and empathy as the mediators along with covariate variables. ($n=232$); * $p < .05$; ** $p < .01$; *** $p < .001$.

Discussion

Considering the role of disgust in charity advertising is interesting given that some theories of emotion suggest disgust is antisocial in nature and triggers an immediate rejection response. Yet many examples of disgust-evoking content can be found in campaigns produced by charity organizations. Although research in this area is still limited in scope, with existing studies presenting mixed findings, extant evidence taken together suggests disgust diminishes the effectiveness of charity appeals (Allred and Amos 2018; Chan and Septianto 2022). The current study extended this line of research by examining the dual roles of empathy and anticipated difficulty of psychological escape as mechanisms underlying the effect of disgust on charitable outcomes. This study also considered longer-term effects of disgust by varying the timing of a donation request to occur immediately or after a delay.

Results show that relative to a control message that portrayed healthy, happy children, exposure to a message that included disgust-evoking depictions of NTDs reduced participants' motivation to consider the issue further. Immediately following exposure, participants in the disgust condition also reported lower levels of empathy compared to the control condition. At the same time, disgust was more effective at increasing perceptions that it would be difficult to forget the message. Immediately following exposure, difficulty of psychological escape, but not empathy, mediated the effect of disgust exposure on donations. Mediation results were similar when the donation request was delayed. Over time, levels of empathy diminished for both the disgust and control conditions. However, this decline was much less accelerated for disgust. In other words, feelings of empathy were more stable among participants who viewed the disgust appeal such that they eventually reported higher levels of empathy. In terms of main effects, it should be noted that there were no significant differences in donation amounts between conditions in either time period.

Theoretical implications

Results of the current study add a nuanced contribution to existing research examining the role of disgust in charity appeals and prosocial behavior. On one hand, findings that disgust reduces motivation to consider the issue are consistent with the theoretical view of disgust as motivating rejection (Pizarro, Detweiler-Bedell, and Bloom 2004; Rozin, Haidt, and McCauley 2017). Likewise, the negative relationship between disgust exposure and empathy confirms the results of recent studies involving charity appeals and behavior (Chan and Septianto 2022; Mazur and Gormsen 2020).

But emotion is complex and so is the helping decision process. Although empathy is often a key motivator of charity, the current results suggest that may not be the case once other motivations are controlled for. This may help to explain some of the conflicting findings in previous work. Empathy was often the only mediator and it may not have adequately explained

variations in behavior and intentions. Chan and Septianto (2022) found that disgust-evoking charity appeals that were self-focused—such as donation requests from a cancer foundation that activated perceptions of one's cancer risk—increased donations without relying on empathy. Using a more traditional appeal, the current study demonstrates that disgust-evoking appeals may intrinsically motivate giving through anticipation that the need situation will be difficult to forget. In this instance, making a donation may serve only to relieve personal feelings of distress and may also be self-focused in nature (Stocks, Lishner, and Decker 2009).

Examining longer-term effects, as was done in the current study, suggests a more dynamic process. Not only did participants in the disgust exposure anticipate thinking about the issue more, those in the delayed condition continued to think about it in the days following exposure. The long-term analyses also add to evidence that certain emotions may drive sleeper effects of persuasion including in charity contexts. Disgust may have been a discounting cue for empathy responses in the short term, but it also maintained those responses in comparison to the control condition, following a relative sleeper-effect pattern. Disgust-evoking appeals may help mitigate empathy loss by sustaining people's attention for an issue over time. Even so, difficulty of psychological escape remained the only mediator of the effect of disgust exposure on giving in the delayed condition.

The finding that participants did not want to consider the issue further but ultimately thought about it more shows that disgust appeals may influence message processing in opposing ways and supports the idea that disgust can both repel and captivate attention (Joffe 2008). This tension between wanting to avoid the message and being unable to forget it may be one benefit of using imagery that elicits disgust in charity appeals.

Although donations trended higher in the disgust conditions, these differences were not significant. This null finding contrasts prior work that found a negative main effect of disgust on giving intentions and behavior (Allred and Amos 2018; Chan and Septianto 2022). It is not clear what accounts for these differences. It could be differences in the stimuli used. Chan and Septianto (2022) used the same images without disgust, and Allred and Amos (2018) used mildly disgusting images as the control groups, whereas the current study used more positive images. It could be that images of children motivate giving at a similar level as other types of appeals even with disgust-evoking aspects present. What is clear is that different variables triggered by the disgust condition motivated participants to comply with the request compared to the control condition.

Implications for practice

The results of this study have several implications for the development of charity campaigns. First, they call into question advisories to avoid using disgust-evoking images, at least from the perspective that they have negative effects on giving. Giving was as high in response to the disgust appeal as the control appeal. For charity organizations dedicated to addressing social problems that are unpleasant to witness, exposing the realities of these issues may be an acceptable and effective strategy. Such campaigns may motivate giving at levels similar to using positive imagery while also sustaining higher levels of awareness. Message planners should not discount the ability of aversive messages to influence attitudes without motivating high levels of attention either. Charitable campaigns operate in a cluttered media market where they are often competing against other consumer messages produced on larger budgets with the ability to create significantly more impressions. Messages that can achieve significant effects with minimal attention on the part of the audience will optimize resources. Of course, charities must operate ethically. Simply attaching irrelevant disgust imagery to a cause may be problematic, or at the very least require careful creative strategy. Pretesting will also be important to discern the kinds of issues and the types of portrayals that are appropriate for different audience segments. This is especially relevant for longer-running campaigns and those that use separate awareness messages and donation request tactics, such as ads followed by direct-mail appeals.

Giving in response to the disgust appeal trended higher in both time periods. Though not statistically significant, this finding may have practical significance. Organizations may be willing to accept greater risk that there truly is no difference in an effort to maximize donations. When there is a necessary time gap between exposure to a message and the subsequent ask, charity organizations should be mindful of designing messages to bridge the time lapse by sustaining intermediate outcomes. However, increasing capacity to time the ask very near to exposure should also be considered, as participants gave greater amounts immediately following exposure for both appeal types. Text giving and other mobile donation platforms are obvious tactics in the current media environment, but partnering with and running ads in spaces where consumers already conduct business, such as retail stores, can extend these options.

Finally, charity advertisers should be wary of simplistic approaches to cultivating empathy. Empathy has long been considered a key driver of prosocial behavior, but the current results suggest that the nature of empathy in response to messages may evolve over time. Messages that are difficult to dismiss and trigger complex responses may be more successful at connecting audiences to social causes even when initial levels of empathy are lower.

Limitations and future research

This study has a number of strengths, which include recruiting a large nonstudent sample, examining responses several days after exposure, and measuring actual donation behavior rather than intentions to give. There are also some limitations to the design, such as relying on self-reported measures, which can be subject to bias. Future research may also consider objective measures, like eye tracking, to better understand attentional motivation processes in this context. Other measures of message rejection beyond avoidance including message discounting or counterarguing should be examined as well. Delayed effects were measured three days after exposure, but some studies use a longer time frame. Future research should consider whether there are boundaries for delayed effects such that more or less distinct differences would be found with a longer time between exposure and the decision point.

A lack of support for direct effects of messages on behavior is not uncommon, and findings from the current study point to important mediating factors. Still, future research should consider other outcomes such as message sharing, volunteering, or performing a virtual helping task to more fully understand behavioral responses to disgust-evoking charity appeals. Research should continue examining differences in processing discrete emotional appeals and the lasting effects of the distinct motivations they evoke on future giving. Future research may examine additional mediating variables, such as perspective taking or feelings of affiliation, that could not be addressed in the scope of the current study.

Finally, while this study addresses message effects it does not address ethical concerns such as rights of campaign beneficiaries concerning how they are portrayed or of audiences to not be exposed to distressing content (Brown and Whiting 2014). Future research should also consider the potential for messages to exacerbate social ills by desensitizing audiences and dehumanizing the neediest members of society (Bandura 2002), or stimulating helping that is superficial and misdirected (Loewenstein and Small 2007). Yet it should also balance these considerations against the consequences of masking harsh realities from public consciousness. Addressing dire social ills may be largely dependent on media depictions that draw attention to need, and the images that tell stories of need are often not pleasant and at times revolting.

Note

1. Others have used the term *rubbernecking* to refer to the ability of unpleasant emotional stimuli to capture our attention (Turner and Silvia 2006). I suggest the term *rubber-band effect* better captures the tension between the repelling and captivating effects of disgust (i.e., pulling the rubber band away and it snapping back).

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Declaration of interest

The author reports there are no competing interests to declare.

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ORCID

Deena Kemp  <http://orcid.org/0000-0002-0155-510X>

Data availability

The data set associated with this paper is available for review: <https://figshare.com/s/4620c07998b30873c7fa>

References

- Allred, A. T., and C. Amos. 2018. "Disgust Images and Nonprofit Children's Causes." *Journal of Social Marketing* 8 (1): 120–140. doi:10.1108/JSOCM-01-2017-0003.
- Antonetti, P., P. Baines, and S. Jain. 2018. "The Persuasiveness of Guilt Appeals over Time: Pathways to Delayed Compliance." *Journal of Business Research* 90: 14–25. doi:10.1016/j.jbusres.2018.03.030.
- Bandura, A. 2002. "Selective Moral Disengagement in the Exercise of Moral Agency." *Journal of Moral Education* 31 (2): 101–119. doi:10.1080/0305724022014322.
- Bates, B. R., and A. E. Chadwick. 2015. "Measuring State Disgust: Initial Evidence for the Reliability and Validity of an English-Language Version of the Ekel-State-Fragebogen." *Communication Research Reports* 32 (1): 73–82. doi:10.1080/08824096.2014.989978.
- Batson, C. D., N. Ahmad, D. A. Lishner, and J. Tsang. 2002. "Empathy and Altruism." In *Oxford Handbook of Positive Psychology*, edited by C. R. Snyder and S. J. Lopez, 161–174. New York: Oxford University Press.
- Batson, C. D., B. D. Duncan, P. Ackerman, T. Buckley, and K. Birch. 1981. "Is Empathic Emotion a Source of Altruistic Motivation?" *Journal of Personality and Social Psychology* 40 (2): 290–302. doi:10.1037/0022-3514.40.2.290.
- Batson, C. D., J. G. Batson, C. A. Griffitt, S. Barrientos, J. R. Brandt, P. Sprengelmeyer, and M. J. Bayly. 1989. "Negative-state Relief and the Empathy—Altruism Hypothesis." *Journal of Personality and Social psychology* 56 (6): 922.
- Batson, C. D., and L. L. Shaw. 1991. "Evidence for Altruism: Toward a Pluralism of Prosocial Motives." *Psychological Inquiry* 2 (2): 107–122. doi:10.1207/s15327965pli0202_1.
- Bekkers, R. 2010. "Who Gives What and When? A Scenario Study of Intentions to Give Time and Money." *Social Science Research* 39 (3): 369–381. doi:10.1016/j.ssresearch.2009.08.008.
- Bekkers, R., and P. Wiepking. 2011. "A Literature Review of Empirical Studies of Philanthropy: Eight Mechanisms That Drive Charitable Giving." *Nonprofit and Voluntary Sector Quarterly* 40 (5): 924–973. doi:10.1177/0899764010380927.
- Brosius, H. B. 1993. "The Effects of Emotional Pictures in Television News." *Communication Research* 20 (1): 105–124. doi:10.1177/009365093020001005.
- Brown, S. L., and D. Whiting. 2014. "The Ethics of Distress: Toward a Framework for Determining the Ethical Acceptability of Distressing Health Promotion Advertising." *International Journal of Psychology* 49 (2): 89–97. doi:10.1002/ijop.12002.
- Buckels, E. E., and P. D. Trapnell. 2013. "Disgust Facilitates Outgroup Dehumanization." *Group Processes & Intergroup Relations* 16 (6): 771–780. doi:10.1177/1368430212471738.
- Carrera, P., L. Ocejja, A. Caballero, D. Muñoz, B. López-Pérez, and T. Ambrona. 2013. "I Feel So Sorry! Tapping the Joint Influence of Empathy and Personal Distress on Helping Behavior." *Motivation and Emotion* 37 (2): 335–345. doi:10.1007/s11031-012-9302-9.
- Chan, E. Y., and F. Septianto. 2022. "Disgust Predicts Charitable Giving: The Role of Empathy." *Journal of Business Research* 142 (January): 946–956. doi:10.1016/j.jbusres.2022.01.033.
- Chapman, H. A., K. Johannes, J. L. Poppenk, M. Moscovitch, and A. K. Anderson. 2013. "Evidence for the Differential Salience of Disgust and Fear in Episodic Memory." *Journal of Experimental Psychology. General* 142 (4): 1100–1012. doi:10.1037/a0030503.

- Charash, M., and D. McKay. 2002. "Attention Bias for Disgust." *Journal of Anxiety Disorders* 16 (5): 529–541. doi:10.1016/S0887-6185(02)00171-8.
- Cherry, T. L., P. Frykblom, and J. F. Shogren. 2002. "Hardnose the Dictator." *American Economic Review* 92 (4): 1218–1221. <http://www.jstor.org/stable/3083309>.
- Chuan, A., J. B. Kessler, and K. L. Milkman. 2018. "Field Study of Charitable Giving Reveals That Reciprocity Decays over Time." *Proceedings of the National Academy of Sciences of the United States of America* 115 (8): 1766–1771. doi:10.1073/pnas.1708293115.
- Clayton, R. B., G. Leshner, R. L. Tomko, T. J. Trull, and T. M. Piasecki. 2017. "Countering Craving with Disgust Images: Examining Nicotine Withdrawn Smokers' Motivated Message Processing of Anti-Tobacco Public Service Announcements Countering Craving with Disgust Images: Examining Nicotine Withdrawn Smokers' Motivated Message Proc." *Journal of Health Communication* 22 (3): 254–261. doi:10.1080/10810730.2016.1268222.
- Collymore, N. N., and M. R. McDermott. 2016. "Evaluating the Effects of Six Alcohol-Related Message Frames on Emotions and Intentions: The Neglected Role of Disgust." *Journal of Health Psychology* 21 (9): 1907–1917. doi:10.1177/1359105314567910.
- Dasgupta, N., D. Desteno, L. A. Williams, and M. Hunsinger. 2009. "Fanning the Flames of Prejudice: The Influence of Specific Incidental Emotions on Implicit Prejudice." *Emotion* 9 (4): 585–591. doi:10.1037/a0015961.
- Dens, N., P. De Pelsmacker, and W. Janssens. 2008. "Exploring Consumer Reactions to Incongruent Mild Disgust Appeals." *Journal of Marketing Communications* 14 (4): 249–269. doi:10.1080/13527260802141231.
- Dillard, J. P., and R. L. Nabi. 2006. "The Persuasive Influence of Emotion in Cancer Prevention and Detection Messages." *Journal of Communication* 56 (suppl_1): S123–S139. doi:10.1111/j.1460-2466.2006.00286.x.
- Frijda, N. 1986. *The Emotions: Studies in Emotion and Social Interaction*. Paris: Maison de Sciences de l'Homme.
- Fultz, J., M. Schaller, and R. B. Cialdini. 1988. "Empathy, Sadness, and Distress: Three Related but Distinct Vicarious Affective Responses to Another's Suffering." *Personality & Social Psychology Bulletin* 14 (2): 312–325.
- Haidt, J., C. R. McCauley, and P. Rozin. 1994. "Individual Differences in Sensitivity to Disgust: A Scale Sampling Seven Domains of Disgust Elicitors." *Personality and Individual Differences* 16 (5): 701–713. doi:10.1016/0191-8869(94)90212-7.
- Harris, L. T., and S. T. Fiske. 2006. "Dehumanizing the Lowest of the Low." *Psychological Science* 17 (10): 847–853.
- Herz, R. S. 2012. *That's Disgusting: Unraveling the Mysteries of Repulsion*. New York: W. W. Norton & Company, Inc.
- Hilbe, J. M. 2011. *Negative Binomial Regression*. Cambridge: Cambridge University Press.
- Hovland, C., A. Lumsdaine, and F. Sheffield. 1949. *Experiments on Mass Communication*. New Jersey: Princeton University Press.
- Hudson, D., J. VanHeerde-Hudson, N. Dasandi, and N. S. Gaines. 2016. "Emotional Pathways to Engagement with Global Poverty: An Experimental Analysis." Public Opinion & Foreign Aid Workshop, University of Essex.
- Inbar, Y., D. A. Pizarro, and P. Bloom. 2012. "Disgusting Smells Cause Decreased Liking of Gay Men." *Emotion* 12 (1): 23–27. doi:10.1037/a0023984.
- Izard, C. E. 1977. *Human Emotions*. New York: Springer Science & Business Media.
- Jenni, K. E., and G. Loewenstein. 1997. "Explaining the 'Identifiable Victim Effect'." *Journal of Risk and Uncertainty* 14 (3): 235–257. doi:10.1023/A:1007740225484.
- Jensen, J. D., J. K. Bernat, K. M. Wilson, and J. Goonewardene. 2011. "The Delay Hypothesis: The Manifestation of Media Effects over Time." *Human Communication Research* 37 (4): 509–528. doi:10.1111/j.1468-2958.2011.01415.x.
- Joffe, H. 2008. "The Power of Visual Material: Persuasion, Emotion and Identification." *Diogenes* 55 (1): 84–93. doi:10.1177/0392192107087919.
- Kelly, D., and N. Morar. 2014. "Against the Yuck Factor: On the Ideal Role of Disgust in Society." *Utilitas* 26 (2): 153–177. doi:10.1017/S0953820813000290.
- Konijn, E. A., and J. M. Holt. 2010. "From Noise to Nucleus: Emotion as Key Construct in Processing Media Messages." In *The Routledge Handbook of Emotions and Mass Media*, edited by Katrin Döveling, Christian von Scheve, and Elly A. Konijn, 51–73. New York: Routledge.
- Kumkale, G. T., and D. Albarracín. 2004. "The Sleeper Effect in Persuasion: A Meta-Analytic Review." *Psychological Bulletin* 130 (1): 143–172. doi:10.1037/0033-2909.130.1.143.
- Landy, J. F., and G. P. Goodwin. 2015. "Does Incidental Disgust Amplify Moral Judgment? A Meta-Analytic Review of Experimental Evidence." *Perspectives on Psychological Science* 10 (4): 518–536. doi:10.1177/1745691615583128.
- Lazarus, R. S. 1991. *Emotion and Adaptation*. New York: Oxford University Press.
- Levine, L. J., and M. A. Safer. 2002. "Sources of Bias in Memory for Emotions." *Current Directions in Psychological Science* 11 (5): 169–173. doi:10.1111/1467-8721.00193.
- Loewenstein, G., and D. A. Small. 2007. "The Scarecrow and the Tin Man: The Vicissitudes of Human Sympathy and Caring." *Review of General Psychology* 11 (2): 112–126. doi:10.1037/1089-2680.11.2.112.
- Mazur, L. B., and E. Gormsen. 2020. "Disgust Sensitivity and Support for Organ Donation: Time to Take Disgust Seriously." *Journal of General Internal Medicine* 35 (8): 2347–2351. doi:10.1007/s11606-020-05734-0.
- Morales, A. C., and G. J. Fitzsimons. 2007. "Product Contagion: Changing Consumer Evaluations through Physical Contact with 'Disgusting' Products." *Journal of Marketing Research* 44 (2): 272–283. doi:10.1509/jmkr.44.2.272.
- Morales, A. C., E. C. Wu, and G. J. Fitzsimons. 2012. "How Disgust Enhances the Effectiveness of Fear Appeals." *Journal of Marketing Research* 49 (3): 383–393. doi:10.1509/jmr.07.0364.

- Nabi, R. L. 1999. "A Cognitive-Functional Model for the Effects of Discrete Negative Emotions on Information Processing, Attitude Change, and Recall." *Communication Theory* 9 (3): 292–220. doi:10.1111/j.1468-2885.1999.tb00172.x.
- Nabi, R. L. 2002. "The Theoretical versus the Lay Meaning of Disgust: Implications for Emotion Research." *Cognition & Emotion* 16 (5): 695–703. doi:10.1080/02699930143000437.
- Nabi, R. L. 2014. "Action Tendency Emotions" In *Encyclopedia of Health Communication*, edited by Teresa L. Thompson, 8–10. California: SAGE Publications.
- Nabi, R. L. 2019. "Media and Emotions." In *Media Effects: Advances in Theory and Research*, edited by M. B. Oliver, A. A. Raney, and J. Bryant, 163–178. New York: Routledge.
- Nabi, R. L., E. Moyer-Guse, and S. Byrne. 2007. "All Joking Aside: A Serious Investigation into the Persuasive Effect of Funny Social Issue Messages." *Communication Monographs* 74 (1): 29–54. doi:10.1080/03637750701196896.
- Parry, S., R. Jones, P. Stern, and M. Robinson. 2013. "Shockvertising: An Exploratory Investigation into Attitudinal Variations and Emotional Reactions to Shock Advertising." *Journal of Consumer Research* 12 (2): 112–121. doi:10.1002/cb.
- Peer, E., L. Brandimarte, S. Samat, and A. Acquisti. 2017. "Beyond the Turk: Alternative Platforms for Crowdsourcing Behavioral Research." *Journal of Experimental Social Psychology* 70: 153–163. doi:10.1016/j.jesp.2017.01.006.
- Pizarro, D. A., B. Detweiler-Bedell, and P. Bloom. 2004. "The Creativity of Everyday Moral Reasoning, Empathy, Disgust, and Moral Persuasion." In *Creativity and Reason in Cognitive Development*, edited by James C. Kaufman and John Baer, 81–98. New York: Cambridge University Press.
- Pratkanis, A. R., A. G. Greenwald, M. R. Leippe, and M. H. Baumgardner. 1988. "In Search of Reliable Persuasion Effects: III. The Sleeper Effect Is Dead: Long Live the Sleeper Effect." *Journal of Personality and Social Psychology* 54 (2): 203–218.
- Renner, S., J. Lindenmeier, D. K. Tscheulin, and F. Dreves. 2013. "Guilt Appeals and Prosocial Behavior: An Experimental Analysis of the Effects of Anticipatory versus Reactive Guilt Appeals on the Effectiveness of Blood Donor Appeals." *Journal of Nonprofit & Public Sector Marketing* 25 (3): 237–255. doi:10.1080/1049514.2.2013.816595.
- Rohrmann, S., H. Hopp, and M. Quirin. 2008. "Gender Differences in Psychophysiological Responses to Disgust." *Journal of Psychophysiology* 22 (2): 65–75. doi:10.1027/0269-8803.22.2.65.
- Roseman, I., C. Wiest, and T. Swartz. 1994. "Phenomenology, Behaviors, and Goals Differentiate Discrete Emotions." *Journal of Personality and Social Psychology* 67 (2): 206–221. doi:10.1037/0022-3514.67.2.206.
- Rozin, P., J. Haidt, and C. McCauley. 2017. *Disgust*. 2016.
- Rozin, P., J. Haidt, and C. R. McCauley. 1993. "Disgust." In *Handbook of Emotions*, edited by Michael Lewis and Jeannette M. Haviland, 575–594. New York: Guilford Press.
- Rozin, P., L. Millman, and C. Nemeroff. 1986. "Operation of the Laws of Sympathetic Magic in Disgust and Other Domains." *Journal of Personality and Social Psychology* 50 (4): 703–712. doi:10.1037/0022-3514.50.4.703.
- Rushton, J. P., R. D. Chrisjohn, and C. G. Fekken. 1981. "The Altruistic Personality and the Self-Report Altruism Scale." *Personality and Individual Differences* 2 (4): 293–302. doi:10.1016/0191-8869(81)90084-2.
- Shimp, T. A., and E. W. Stuart. 2004. "The Role of Disgust as an Emotional Mediator of Advertising Effects." *Journal of Advertising* 33 (1): 43–53. <http://www.jstor.org/stable/4189245>.
- Stocks, E. L., D. A. Lishner, and S. K. Decker. 2009. "Altruism or Psychological Escape: Why Does Empathy Promote Prosocial Behavior?" *European Journal of Social Psychology* 39 (5): 649–665. doi:10.1002/ejsp.561.
- Stocks, E. L., B. Lopez-Perez, and L. V. Ocejja. 2017. "Can't Get You out of My Mind: Empathy, Distress, and Recurring Thoughts about a Person in Need." *Motivation and Emotion* 41 (1): 84–95. doi:10.1007/s11031-016-9587-1.
- Strohming, N. 2014. "Disgust Talked about." *Philosophy Compass* 9 (7): 478–493. doi:10.1111/phc3.12137.
- Turner, S. A., and P. J. Silvia. 2006. "Must Interesting Things Be Pleasant? A Test of Competing Appraisal Structures." *Emotion* 6 (4): 670–674. doi:10.1037/1528-3542.6.4.670.
- Tybur, J. M., A. D. Bryan, R. E. Magnan, and A. E. C. Hooper. 2011. "Smells like Safe Sex: Olfactory Pathogen Primes Increase Intentions to Use Condoms." *Psychological Science* 22 (4): 478–680.
- Verduyn, P., F. Tuerlinckx, and K. Van Gorp. 2013. "Measuring the Duration of Emotional Experience: The Influence of Actual Duration and Response Format." *Quality & Quantity* 47 (5): 2557–25567. doi:10.1007/s11135-012-9671-x.
- Walter, N., M. J. Cody, L. Z. Xu, and S. T. Murphy. 2018. "A Priest, a Rabbi, and a Minister Walk into a Bar: A Meta-Analysis of Humor Effects on Persuasion." *Human Communication Research* 44 (4): 343–373. doi:10.1093/hcr/hqy005.
- Wheatley, T., and J. Haidt. 2005. "Hypnotic Disgust Makes Moral Judgments More Severe." *Psychological Science* 16 (10): 780–784.
- Witte, K., and M. Allen. 2000. "A Meta-Analysis of Fear Appeals: Implications for Effective Public Health Campaigns." *Health Education & Behavior* 27 (5): 591–615. doi:10.1177/109019810002700506.