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Individuals' Prosocial Behaviors in the Aftermath of the 2024 Flood in Poland: The Role of Empathy, Norm Activation, and Moral Emotions

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Abstract

This three-wave study examined psychological correlates of four forms of helping flood victims: monetary donations, in-kind gifts, volunteering in one's place of residence, and volunteering at the flood site. This study drew on the Empathy–Altruism Hypothesis and the Norm Activation Model. Data were collected in February, April, and June 2025 from 1,028 Polish adults (M = 48.85, SD = 13.68). Results showed that affective and cognitive empathy, and pride, were positively associated with monetary and in-kind donations. Awareness of consequences was positively associated with both forms of donation, and negatively with on-site volunteering. Responsibility ascription and personal norms were positively associated with donations and volunteering in participants' place of residence. Guilt was positively associated with on-site volunteering. Most wave × covariate interactions were not statistically significant. The findings indicate that psychological correlates differ across forms of disaster-related support, underscoring the value of examining these behaviors separately.

Introduction

In September 2024, a Genoa low, commonly known as Boris, spread across Central and Eastern Europe and caused exceptionally heavy rainfall. The flood that resulted from it ranked seventh among the ten most financially devastating climate disasters globally in 2024. It claimed 26 lives (including 9 in Poland only) and caused economic damage estimated at approximately 5.2 billion US dollars (Ware & Pearce, 2024).

In Poland, the flooding represented one of the most significant crises Poland had faced in recent years. In just 72 hours, some areas recorded precipitation surpassing 400 mm, a figure that exceeds the entire yearly average for much of Poland (HydroBIM, 2024). The disaster lasted for 22 days (Państwowe Gospodarstwo Wodne Wody Polskie, 2025). The impact was devastating: homes, roads, and bridges were left in ruins, tens of thousands of residents were forced to flee, public health was threatened, and both the agricultural and industrial sectors suffered severe losses (Nowakowska et al., 2025), estimated at over 10 billion Polish zloty (ca. US$2.5 billion; Springer, 2025). Returning to normality required long-term support from the community and society at large, as well as significant workforce and resources. However, research on natural disasters shows that social support is typically mobilized immediately but tends to deteriorate over time (Kaniasty, 2020). Still, some donors remain active in the longer term (Carlile et al., 2014).

Our longitudinal study was conducted five, seven, and nine months after the flood, assessing participants' engagement in four forms of supportive behavior: monetary donations, in-kind gifts, volunteering in the place of residence, and volunteering at the flood site. We aimed to examine the potential predictors of engagement in this support among members of Polish society who were not directly affected. We considered individual differences theoretically linked to prosocial engagement, drawing on the Empathy–Altruism Hypothesis (EAH; Batson et al., 2015) and the Norm Activation Model (NAM; Schwartz, 1970), extended by the concept of moral emotions (Gärling et al., 2003). We were also interested in whether the individual differences we focused on relate to differences in engagement in each of the ways of supporting flood victims across study points.

Theoretical review

When a natural catastrophe occurs, the public rapidly becomes an indirect witness of the event. Within minutes, mass and digital media disseminate information, increasing awareness about the disaster, which in turn mobilizes social support (Kaniasty, 2020). The social support responses may encompass a spectrum of prosocial behaviors that differ in terms of the required commitment.

Commitment refers to the demands involved in performing a prosocial behavior (Ajzen, 1991; Omoto & Snyder, 1995). Donations, local volunteering (at one's place of residence), and on-site

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volunteering involve increasing levels of time cost, coordination, situational immersion, emotional exposure, and physical risk (Bekkers & Wiepking, 2011; Clary et al., 1998; Handy & Katz, 2008; Hustinx & Lammertyn, 2003; List, 2011; Wilson, 2000). Volunteering in the place of residence in the context of the 2024 flood in Poland referred to prosocial activities such as packing relief supplies, coordinating logistics, or fundraising activities. Although still requiring coordination and time investment, these activities were spatially and contextually decoupled from the immediate site of impact. In contrast, onsite volunteering referred to physically present engagement at the disaster location (e.g., in the flood-affected area), where individuals directly operated within the affected environment, often under constrained conditions, higher coordination demands, and increased exposure to disruption and urgency. This form of participation, compared to donations and volunteering in the place of residence, therefore represented the highest level of commitment.

Presumably, all people who decided to engage in disaster relief prosocial behaviors displayed individual differences that related to their readiness to act. Nevertheless, what individual differences guided which type of engagement in the first phase of the crisis and later on remains unclear. We argue that the two theories of prosocial behaviors: EAH (Batson et al., 2015) and NAM (Schwartz, 1977) extended with moral emotions of pride and guilt (e.g., Onwezen et al., 2013) might help understand this phenomenon and better predict the behavioral outcomes in the post-disaster communities.

Rather than treating empathy, norm activation, and moral emotions as components of a single integrated model, we adopt a heuristic classification of motives, in which each construct is expected to account for a distinct facet of prosocial engagement, without assuming a unified causal structure linking them. This classification rests on the different theoretical role each construct is thought to play: the EAH describes an affective, largely automatic pathway to helping that does not require deliberate moral reasoning or an explicit sense of obligation (Batson et al., 2015), whereas NAM describes a pathway in which helping follows from a cognitive appraisal of consequences and responsibility, translated into an internalized obligation (Schwartz, 1977). Guilt and pride extend this by capturing its affective consequences, regulating whether norm-based intentions are sustained over time (Onwezen et al., 2013).

Empathy therefore adds a source of motivation that does not presuppose the cognitive judgment of obligation central to NAM and associated moral emotions. Accordingly, empathy may be particularly relevant for low-commitment forms of giving, whereas the obligation-based pathway may be more consequential for sustaining higher-commitment engagement, such as volunteering, which requires ongoing role-based investment. We use this classification as a heuristic lens for organizing testable predictions about differential predictors across behaviors.

Empathy–Altruism Hypothesis

According to the EAH (Batson et al., 1987, 2015), empathy is a significant driver of prosocial behavior, as it motivates actions aimed at alleviating another person's suffering. It can also strengthen the sense of responsibility for others (González & Lay, 2017; Shoemaker, 2017). Individuals with high levels of dispositional empathy may be especially prone to resonate with the victims' suffering (affective empathy, involving the sharing of and responsiveness to others' emotions) and to understand their experiences (cognitive empathy, involving taking the perspective of others and gaining insight into their situation; Jolliffe & Farrington, 2006).

Empirical findings confirm that empathy is positively associated with charitable donations (Kim & Kou, 2014; Tusche et al., 2016). Greater empathy predicts more positive expectations of volunteering (Barraza, 2011) and relates positively to both the length of volunteering experience and the amount of time dedicated to it (Penner & Finkelstein, 1998). In disaster contexts, empathy has been shown to mediate the relationship between social support and an aggregated index of prosocial behavior in adolescents following a flood in China (Wang et al., 2023). Likewise, in Iran, individuals engaged in flood relief reported higher levels of empathy than those not involved in helping (Mazraeh et al., 2023).

Nevertheless, contrasting evidence suggests that while empathic concern strongly predicts spontaneous and informal helping, such as assisting someone in immediate distress, it is a weaker predictor of planned, impersonal, or high-effort prosocial actions, including volunteering (Einolf, 2008). One explanation is that excessive empathy, particularly affective, may overwhelm individuals, leading to emotional exhaustion or burnout, especially under high-stress or high-commitment conditions (Huang et al., 2025). This makes the maintenance of helping behavior more difficult.

Furthermore, compassion, a prosocial emotion rooted in empathy, is also cognitively demanding; when it is perceived as overly taxing, individuals may avoid engaging in relief actions despite being motivated to help (Scheffer et al., 2022). Research on donation behaviors shows that emotion regulation strategies, such as distancing, can reduce negative affect (often triggered by high affective empathy; Batson et al., 2015), thereby weakening empathy's motivational impact in high-cost situations (Brethel-Haurwitz et al., 2020). A particularly high-cost situation is volunteering for flood victims at the disaster site, which requires personal presence, emotional involvement, and a substantial investment of time that could otherwise be devoted to paid work, family life, or leisure. Building on these findings, the present study formulated the following hypothesis:

H1: Dispositional affective and cognitive empathy are positively related to low-commitment prosocial behaviors toward flood victims (i.e., monetary donations and in-kind gifts).

In the present study, and consistent with the well-documented pattern of social support mobilization and subsequent deterioration (Kaniasty, 2020), we expect prosocial behaviors to decline over time. Recent studies suggest that empathy can sustain prosocial intentions across time (Nowakowska et al., 2024; Nowakowska & Rajchert, 2025). In the context of flooding, lower levels of empathy may limit individuals' ability to understand the emotions and perspectives of victims, thereby reducing their willingness to provide support—not only in general but also in the longer term. Based on this reasoning, we hypothesized that:

H2: Lower dispositional affective and cognitive empathy decreases prosocial behaviors toward flood victims across the study period.

Norm Activation Model

Decety (2021) emphasized that while empathy can motivate prosocial behavior, it is vulnerable to biases and situational contingencies. In contrast, moral reasoning offers a more stable foundation for sustained action. Schwartz (1977) introduced the NAM, a theoretical framework proposing that prosocial and altruistic behavior is primarily driven by personal norms, which are the internalized moral obligations (self-endorsed moral duties) to perform a prosocial act. Following these self-expectations, people maintain a coherent self-image, avoiding cognitive dissonance.

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NAM emphasizes the role of awareness of the consequences of an event that may trigger the need for action (e.g., a natural catastrophe) and the ascription of responsibility for taking prosocial action in the process of activating personal norms. In turn, these norms motivate behavioral intentions and concrete helping actions (Onwezen et al., 2013; Schwartz, 1977; Steg & De Groot, 2010). Although NAM was initially applied to explain self-sacrificing and pro-environmental behavior, it has since been extended to other forms of prosocial action, such as community-focused prosocial behaviors and compliance with medical recommendations (Rui et al., 2022; Steg & De Groot, 2010).

Schwartz (1970) in his experimental study on blood donors found that feelings of moral obligation (i.e., personal norms) influenced the readiness for a self-sacrificial bone marrow donation. These feelings were elicited by an appeal to help, which (as hypothesized by Schwartz) provided initial awareness of the consequences of leukemia and a sense of basic personal responsibility. Other evidence from multiple experimental studies based on NAM showed that personal norms, also invoked through awareness of consequences and ascription of responsibility, reliably predicted community-oriented intentions and behavior (regarding participation in actions to: reduce emissions of particulate matter in the local community, agitate against the establishment of a methadone point in one's own neighborhood, ban products made using child labor; Steg & De Groot, 2010).

Personal norms activation, as a NAM element, is also theoretically linked to disaster relief activities, and found to relate to donations to victims of a catastrophe in a high-need country (Andorfer & Otte, 2013). Nevertheless, to date there are no studies comprehensively employing all NAM elements to test disaster relief charitable giving and volunteering behaviors. Based on the above-mentioned applications of this theory to understand self-sacrificial behaviors (Schwartz, 1970) and community-oriented actions (Rui et al., 2022; Steg & DeGroot, 2010), we argue that it is a relevant framework to understand the correlates of such actions over time. Accordingly, in the current study, focused on donation and volunteering behaviors oriented at a community in need, we hypothesized that the key components of the NAM are consistently associated with prosocial behaviors directed towards flood victims:

H3: Awareness of flood consequences, ascription of responsibility for flood victims, and personal norms related to providing help are consistently and positively linked to both low- and high-commitment prosocial behaviors toward flood victims (i.e., monetary donations, in-kind gifts, volunteering in one's place of residence, and volunteering at the flood site).

Over time, as cues about the flood and its consequences become less salient, people may become less inclined to help. Consistent with NAM, when awareness of consequences, ascription of responsibility, and personal norms weaken, the likelihood of sustained prosocial behavior diminishes (Schwartz, 1977). Therefore, we hypothesized that:

H4: Lower awareness of flood consequences, ascription of responsibility for flood victims, and personal norms related to providing help decrease prosocial behaviors toward flood victims across the study period.

Extensions of the Norm Activation Model: Moral emotions

The NAM has been expanded to include the role of moral emotions, especially guilt and pride (Onwezen et al., 2013). Guilt can strengthen moral obligation and increase donation intentions, especially when actions are seen as effective or framed as repairing harm (Andorfer & Otte, 2013; Onwezen et al., 2013). Consequently, guilt has been shown to increase the likelihood of helping, particularly in short-term, reparative forms such as donating money for pro-environmental causes or providing small favors in a behavioral game (Gärling et al., 2003; Ketelaar & Tung Au, 2003). However, once the perceived "moral debt" has been addressed, motivation for prosocial action tends to decline, suggesting that guilt serves as a temporary driver of helping (Ketelaar & Tung Au, 2003).

Guilt appeals do not, however, produce consistent results across all contexts. In some cases, they can prove counterproductive, generating psychological resistance or losing their effectiveness when people feel unable to act on the message. Whether guilt ultimately motivates prosocial behavior or instead prompts individuals to disengage defensively depends on how the message is framed and how it is cognitively processed by the recipient (Graton & Mailliez, 2019).

In contrast, pride motivates sustained, planned, and effortful prosocial behavior, which was empirically confirmed for pro-environmental activities (Gärling et al., 2003), particularly when such behavior is visible, reinforces a positive social image, and maintains a valued social identity (Tracy et al., 2010). Feelings of pride in acting consistently with important personal norms may buffer against the decline in prosocial behaviors by reinforcing a sense of moral accomplishment. Without pride, individuals may be less inclined to sustain costly prosocial behaviors (Hart & Matsuba, 2007; Tracy et al., 2010).

In the context of a natural disaster individuals may be motivated to support victims of an adverse event either by the desire to reduce self-blame and avoid a negative self-image (guilt), or by the aspiration to enhance or sustain a positive self-image (pride; Gärling et al., 2003; Ketelaar & Tung Au, 2003; Tracy et al., 2010). From this perspective, monetary donations or in-kind gifts may be regarded as reparative, low-commitment behaviors that provide immediate relief to the feelings of guilt.

To the best of our knowledge, the role of pride and guilt in shaping prosocial behaviors toward flood victims has not yet been directly investigated. Nevertheless, drawing on the indirect evidence reviewed above, we proposed the following hypotheses:

H5: The feelings of guilt related to violating subjective moral norms positively relate to low-commitment, reparative actions (i.e., monetary donations and in-kind gifts).

H6: The feelings of pride related to realizing subjective moral norms consistently and positively relate to both low- and high-commitment prosocial behaviors toward flood victims (i.e., monetary donations, in-kind gifts, volunteering in one's place of residence, and volunteering at the flood site).

H7: Lower feelings of guilt related to violating subjective moral norms decrease prosocial engagement toward flood victims across the study period.

H8: Lower feelings of pride related to realizing subjective moral norms decrease prosocial engagement toward flood victims across the study period.

Method

Panel attrition data

The current study was based on the results from 2,091 participants aged 18–70 (M = 45.88, SD = 14.50). There were three measurements

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acquired in the three consecutive waves of the study. Of the 2,091 participants, 1,028 participants (49.2%) participated in all three waves, 608 participants (29.1%) participated in two, and 455 participants (21.8%) participated in just one. Participants who took part in all three waves were significantly older than those who took part in two waves or just one. Participants who completed all three waves were less often professionally active than those who completed two waves and were less often from villages than those who completed just one wave, while more often living in big towns than those who completed two waves. In terms of education, those completing all three waves had the lowest share of primary education, the lowest share of vocational education compared to the other two groups, and the highest share of Master's degree holders compared to the other two groups. Those completing two waves had the highest share of primary education and the lowest share of high school education among the three groups, and a higher share of participants from middle towns than those completing just one wave. For detailed *post hoc* test results regarding attrition, see Supplementary Table S1. Further analyses were done on the sample of people who completed all study waves (N = 1,028). Table 1 depicts the final sample characteristics.

Measures

To measure the dependent variable of behaviors related to providing help to the victims of the 2024 flood in Poland, we asked participants direct questions about their behavior: "Did you engage in this behavior for flood victims in Poland at least once?" There were separate questions for the following behaviors regarding disaster relief activities: (1) monetary donation, (2) in-kind gifts, (3) volunteering in their place of residence, or (4) volunteering at the flood site. In the first wave, we asked about such behaviors exhibited since the catastrophe until the time of completing the survey. In the second and third waves, we asked about behaviors undertaken in the two months preceding each measurement. The answer options were 1—no and 2—yes.

Table 1. Sociodemographic characteristics of the current sample

Variables/categories		M	SD
	Age	48.85	13.68
	Socioeconomic status	3.20	0.80
		n	**%**
Gender	Female	510	49.6
	Male	518	50.4
Employed		707	68.8
Place of residence	Village	363	35.3
	Small town (up to 20,000 inh.)	143	13.9
	Middle town (20,000–99,000 inh.)	203	19.7
	Big town (100,000–500,000 inh.)	195	19.0
	Big city (500,000+ inh.)	124	12.1
Education	Primary	18	1.8
	Vocational	90	8.8
	High school	474	46.1
	Bachelor's degree	119	11.6
	Master's degree	320	31.1
	Ph.D. degree	7	0.7

Note: M, mean value; SD, standard deviation; *n*, number of participants; %, group percentage; *p*, statistical significance; inh., inhabitants.

We assessed the level of dispositional affective and cognitive empathy using the Basic Empathy Scale for Adults (BES-A; Carré et al., 2013; Jolliffe & Farrington, 2006; Polish adaptation: Dolistowski & Tanaś, 2020). The BES-A is a 20-item self-report questionnaire with two subscales: Affective (11 items) and Cognitive Empathy (9 items). Participants rated the extent to which they agreed with the items using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Sample items were: "I get caught up in other people's feelings easily" (affective empathy) and "When someone is feeling 'down,' I can usually understand how they feel" (cognitive empathy). In the current study, the reliabilities for the subscales were as follows: Wave 1: $\alpha = 0.86$ for affective empathy and $\alpha = 0.82$ for cognitive empathy; Wave 2: $\alpha = 0.85$ for affective empathy and $\alpha = 0.80$ for cognitive empathy; and Wave 3: $\alpha = 0.86$ for affective empathy and $\alpha = 0.84$ for cognitive empathy.

We measured the variables corresponding to the core elements of the NAM: awareness of flood consequences, ascription of responsibility for flood victims, and personal norms regarding providing help to those affected by the catastrophe. We used a set of eleven items based on previous studies of the NAM (Gärling et al., 2003; Onwezen et al., 2013). We preserved the structure of the original items and adjusted them to the context of the 2024 flood in Poland. Participants rated their agreement with the items on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Sample items were: "The effects of floods negatively influence the entire country's population" (awareness of flood consequences); "solidarity with flood victims is everyone's responsibility" (responsibility ascription); and "because of my values and principles, I should help people in flood-affected areas" (personal norms). The reliabilities for the subscales in the current study were as follows: Wave 1: $\alpha = 0.80$ for awareness of flood consequences, $\alpha = 0.71$ for responsibility ascription, and $\alpha = 0.89$ for personal norms; Wave 2: $\alpha = 0.82$ for awareness of flood consequences, $\alpha = 0.73$ for responsibility ascription, and $\alpha = 0.90$ for personal norms; and Wave 3: $\alpha = 0.81$ for awareness of flood consequences, $\alpha = 0.70$ for responsibility ascription, and $\alpha = 0.89$ for personal norms.

We used two subscales of the Moral Feelings Scale-5 revised form (Strus & Żylicz, 2018) to measure a generalized tendency to feel moral emotions: guilt from acting against one's own important norms and pride from realizing these norms. The 51-item questionnaire has 11 subscales and is designed to measure inclinations toward experiencing various feelings in situations involving the violation or realization of subjectively important moral norms. Part A of the survey addresses situations involving the violation of such norms, and part B addresses situations involving their realization. In Part A, participants are asked to recall a situation in which they violated a moral norm important to them and then mark the frequency with which they experienced a particular emotion in that situation on a 7-point Likert scale (1 = never, 7 = always). Part B is analogous in its construction but refers to realizing subjectively important moral norms. For the current study, we were only interested in two subscales of this measure: guilt in situations involving the violation of a moral norm (subscale named global guilt, consisting of six items) and pride in situations involving the realization of a moral norm (five items). Sample items regard the following feelings that are related to the abovementioned situations: *Severe and/or chronic self-blame* (part of the global guilt subscale)

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and *Satisfaction that one has achieved something* (part of the pride subscale). In the current study, reliabilities for the subscales were as follows: $\alpha = 0.91$ for global guilt and $\alpha = 0.93$ for pride.

Procedure

The study was anonymous and survey-based. Participants were recruited through Ariadna, a well-recognized Poland-wide research panel with an ESOMAR quality mark. Only registered panelists received an invitation to complete the survey. They participated in the study online through the panel system. All three waves of the study were conducted in the same way with the same set of questionnaires. The first wave took place from February 21 to March 3, 2025; the second from April 22 to 30, 2025; and the third from June 23 to 26, 2025.

The present study employed a three-wave design with retrospective reference periods, covering helping-related behavior reported for the first 5 months following the disaster (Wave 1), and subsequent two-month intervals covering months 5–7 (Wave 2) and 7–9 (Wave 3). This design allowed for the examination of differences in helping-related outcomes across successive post-disaster periods rather than absolute levels at fixed single time points.

The temporal framing was guided by the social support mobilization and deterioration framework (Kaniasty, 2020), which conceptualizes disaster-related helping as following a dynamic trajectory characterized by an initial mobilization phase and a subsequent gradual decline in support over time. As the model does not specify discrete temporal cut-offs, the study captures variation within the post-acute deterioration phase, when both spontaneous helping and public attention are expected to decrease and remain stable relative to the immediate aftermath (Norris et al., 2002).

Accordingly, comparisons between the successive intervals (0–5 months—assumed to be a time of immediate action, engagement fluctuation, emergence and then decline in support opportunities, 5–7 months, and 7–9 months—support opportunities predicted to be "as usual") allow for the assessment of within-person differences in helping behavior during a period of overall declining mobilization. We acknowledge that these comparisons may still reflect broader contextual influences, including shifts in opportunity structures and disaster salience, which were not directly measured in the present study.

The study conformed with the Declaration of Helsinki and national and local research ethics regulations. All participants provided informed consent before taking the survey. Participants who completed each survey received points that could be exchanged for rewards from a catalogue provided by the panel (e.g., household utensils, toys, gadgets). The study materials and protocol were approved by the Maria Grzegorzewska University Ethics Committee prior to conduction, approval number 22 2024/2025.

Data analysis

First, we calculated descriptive statistics for prosocial behaviors and intentions to help flood victims. Self-reported engagement covered September 2024–February 2025 at Wave 1, February–April 2025 at Wave 2, and April–June 2025 at Wave 3. The data were analyzed using generalized estimating equations (GEE), which accommodate repeated measurements of dichotomous outcomes. We examined four outcomes measured at all three waves: monetary donations, in-kind gifts, volunteering at the place of residence, and volunteering at the flood site. The psychological covariates were affective empathy, cognitive empathy, awareness of consequences, responsibility ascription, personal norms, guilt, and pride.

Each psychological covariate was analyzed in a separate GEE model. This approach reflected the conceptual overlap among the constructs. Including all seven covariates and their interactions with time in one model could also have introduced multicollinearity and excessive model complexity. Combining seven covariates with four outcomes therefore yielded 28 models. Each model included age, material status, and one psychological covariate. Gender was initially considered as a control variable but was omitted because it was unrelated to the analyzed outcomes. In each model, we tested the main effects of wave and the psychological covariate, as well as their interaction. Wave 1 was the reference category. The interaction term assessed whether the association between a psychological covariate and a given helping behavior varied across the three waves. Statistically significant effects were examined further using estimated odds ratios (ORs), where the event was the reported occurrence of the relevant helping behavior.

Interpretation of time effects accounted for the unequal reference periods. Wave 1 assessed behavior over approximately five months, whereas Waves 2 and 3 each covered two months. Contrasts involving Wave 1 therefore combine possible behavioral change with the mechanical effect of a longer observation window on the probability of reporting an event. Consequently, Wave 1 estimates and contrasts with later waves were calculated to describe prevalence and provide context but were not used to draw firm conclusions about actual change over time.

Results

The following analysis concern only those participants who completed all three waves. Noteworthy, attrition analysis indicated that participants who completed all three waves had significantly lower guilt than those who completed two or just one wave. Those who completed all three waves were also less often involved in in-kind donation and in volunteering at place or/and at flood site than participants in the other two groups. Participants who completed two waves were more often involved in monetary donation than those in the other two groups. See Supplementary Table S2 for details.

Table 2 presents the number and percentage of people who undertook prosocial behaviors toward flood victims across the three waves of the study, as well as data on their intentions to do so in the two months following the survey.

As observed in Table 2, the most popular form of prosocial behavior toward flood victims was monetary donations, and the least popular was volunteering at the flood site. Table 3 depicts the values of tests for the three effects verified, that is, the main effect of study wave, the main effect of each covariate and the interaction between study wave and each covariate.

As shown in Table 3, we found statistically significant main effects of covariates. This was true for each dependent variable. Table 4 depicts the values of estimated ORs for each covariate in relation to each dependent variable.

As shown in Table 4, higher values of affective empathy, cognitive empathy, awareness of consequences, responsibility ascription, personal norms, and pride from realizing subjectively important moral norms strengthened the likelihood of being involved in both monetary donations and in-kind gifts. Higher values of responsibility ascription and personal norms reinforced the likelihood of being involved in volunteering at place of residence. Higher values of guilt from violating subjectively important moral norms were

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Table 2. Prosocial behaviors and intentions toward flood victims across the study waves

Type of behavior	Wave	Self-reported behavior		Intentions to undertake behavior	
		N	%	M	SD
Monetary donation	1	499	48.5	31.37	31.29
	2	428	41.6	31.32	32.05
	3	388	37.7	28.46	30.96
In-kind gifts	1	342	33.3	27.87	30.82
	2	320	31.1	27.92	31.23
	3	305	29.7	26.81	30.64
Volunteering at the place of residence	1	76	7.4	12.00	21.14
	2	88	8.6	12.50	22.15
	3	75	7.3	11.69	20.41
Volunteering at the flood site	1	48	4.7	9.16	18.97
	2	56	5.4	9.34	19.24
	3	46	4.5	9.09	18.54

Note: Self-reported behavior at Wave 1 refers to the period between September 2024 and February 2025. At Waves 2–3, it refers to the two preceding months. Intentions for behavior in all cases range from 0 to 100% of probability of undertaking the behavior and refer to the 2 months following the particular measurement.

associated with higher odds of being involved in volunteering at a flood site. Higher values of awareness of consequences were associated with lower odds of being involved in volunteering at the flood site. However, the effect for awareness of consequences was only close to statistical significance (see Table 3). Therefore, the last effect mentioned needs to be interpreted with caution.

Regarding differences across study periods, statistically significant effects for monetary donation were found when controlling for affective empathy and guilt from violating subjectively important moral norms. When controlling for affective empathy, the odds for being involved in monetary donation were significantly lower in the third wave than in the first wave, $OR = 0.37$, $p < 0.05$. The difference between the first wave and the second wave was statistically nonsignificant, $OR = 0.73$, $p > 0.05$. When controlling for guilt from violating subjectively important moral norms, the odds of being involved in monetary donation were significantly lower in the second wave than in the first wave, $OR = 0.55$, $p < 0.001$, and significantly lower in the third wave than in the first wave, $OR = 0.52$, $p < 0.001$. Statistically significant effects of time for in-kind gifts were found when controlling for guilt from violating subjectively important moral norms and pride from realizing them. When controlling for guilt from violating subjectively important moral norms, the odds for being involved in in-kind gifts were significantly lower in the second wave than in the first wave, $OR = 0.69$, $p < 0.05$, and significantly lower in the third wave than in the first wave, $OR = 0.61$, $p < 0.01$. When controlling for pride from realizing subjectively important moral norms, the odds for being involved in in-kind gifts were significantly lower in the third wave than in the first wave, $OR = 0.46$, $p < 0.01$. The difference between the first wave and the second wave was statistically nonsignificant, $OR = 0.70$, $p > 0.05$. The main effects of study wave for volunteering at place of residence and volunteering at the flood site were statistically nonsignificant. Therefore, being engaged in monetary donation and in-kind gifts differed across study periods, while volunteering at place of residence and volunteering at the flood site did not.

We also found three statistically significant interaction effects between personal norms and study waves when analyzing monetary donation and in-kind gifts as dependent variables and between responsibility ascription and study waves when analyzing volunteering at the flood site as the dependent variable. With the use of the estimates for ORs we found that the odds of being involved in monetary donation were lower in the second wave than in the first wave if personal norms were higher, $OR = 0.84$, $p < 0.05$. Also, the odds of in-kind gifts were lower in the second wave than in the first wave if personal norms were higher, $OR = 0.86$, $p < 0.05$. The odds of being involved in volunteering at the flood site were higher in the second wave than in the first wave if responsibility ascription was higher, $OR = 1.41$, $p < 0.05$. Also, the odds of being involved in volunteering at the flood site were higher in the third wave than in the first wave if responsibility ascription was higher, $OR = 1.43$, $p < 0.05$.

Discussion

Our study yielded several important insights that enhance understanding of behavior patterns related to providing help in the general population in response to flooding. Our data supported H1, showing that both affective and cognitive empathy are positively related to monetary donations and in-kind gifts for flood victims. These findings align with the theoretical assumption that empathy can foster altruistic motivation, which may in turn translate into sustained prosocial action (Batson et al., 2015). Nevertheless, empathy was not associated with volunteering directed at flood victims. This is consistent with prior evidence suggesting that empathy is more predictive of behaviors related to providing help that require immediate action, but less predictive of higher-effort activities such as volunteering (Einolf, 2008). Accordingly, the role of emotional overload from empathy (Scheffer et al., 2022) in refraining from volunteering could be treated as one possible hypothesis for future research. Nevertheless, our data did not support H2, as empathy did not relate to the dynamics of prosocial behavior across study periods.

Further, we fully confirmed H3 for monetary donations and in-kind gifts: awareness of flood consequences, ascription of responsibility for flood victims, and personal helping norms all positively predicted these types of prosocial behavior. These results

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Table 3. Main effect of study wave and covariates, and interactions between study wave and each covariate

		Effects					
		Wave		Covariate		Wave × covariate	
Dependent variable	Covariate	χ^2	p	χ^2	p	χ^2	p
Monetary donation	Affective empathy	6.91	0.032	28.97	0.001	2.72	0.256
	Cognitive empathy	0.30	0.861	27.44	0.001	0.20	0.905
	Awareness of consequences	2.98	0.225	73.10	0.001	2.26	0.323
	Responsibility ascription	2.31	0.315	134.24	0.001	2.16	0.339
	Personal norms	4.61	0.100	198.67	0.001	5.99	0.050
	Guilt	21.34	0.001	5.38	0.020	4.64	0.098
	Pride	3.74	0.154	28.29	0.001	2.08	0.353
In-kind gifts	Affective empathy	0.67	0.717	7.51	0.006	0.25	0.883
	Cognitive empathy	0.71	0.703	8.66	0.003	1.22	0.542
	Awareness of consequences	2.62	0.270	22.04	0.001	2.19	0.335
	Responsibility ascription	5.48	0.065	84.07	0.001	5.44	0.066
	Personal norms	5.62	0.060	128.84	0.001	6.07	0.048
	Guilt	8.54	0.014	2.95	0.086	4.42	0.110
	Pride	8.77	.012	24.21	0.001	5.53	0.063
Volunteering at the place of residence	Affective empathy	0.90	0.639	0.05	0.827	0.89	0.640
	Cognitive empathy	1.19	0.551	0.44	0.508	0.73	0.696
	Awareness of consequences	0.79	0.675	0.20	0.656	0.42	0.809
	Responsibility ascription	0.59	0.745	22.33	0.001	0.34	0.842
	Personal norms	1.77	0.413	16.11	0.001	1.15	.564
	Guilt	0.15	0.929	5.47	0.019	0.27	0.876
	Pride	0.63	0.730	4.36	0.037	0.41	0.815
Volunteering at the flood site	Affective empathy	4.35	0.113	0.29	0.591	3.48	0.175
	Cognitive empathy	1.06	0.588	3.33	0.068	0.67	0.714
	Awareness of consequences	2.04	0.360	3.80	0.051	1.80	0.407
	Responsibility ascription	5.76	0.056	13.71	0.001	6.02	0.049
	Personal norms	0.99	0.610	7.58	0.006	0.98	0.612
	Guilt	0.79	0.672	13.90	0.001	0.65	0.724
	Pride	0.34	0.844	5.93	0.015	0.04	0.978

Note: χ^2, the value of the test for the model effect; p, statistical significance.

are fully consistent with the theoretical propositions (Schwartz, 1977) and prior empirical evidence showing that norm activation mechanisms are linked to prosocial action (Rui et al., 2022; Steg & De Groot, 2010). Moreover, the effects of personal norms on donation behaviors and volunteering at the place of residence were the most prominent compared to other predictors, and stronger than the effect of empathy, which is in line with the theoretical reasoning put forward by Decety (2021).

H3 was also partially confirmed for volunteering in one's place of residence, where responsibility ascription and personal norms (but not awareness of flood consequences) were significant predictors. Whether this reflects the spatial distance of local volunteering from the disaster site, differences in available volunteering opportunities, or other situational factors cannot be determined from the current data. By contrast, H3 was not supported for volunteering at the flood site. No NAM element showed the expected positive association with it. Interestingly, awareness of flood consequences actually negatively predicted volunteering at the site (however, the effect was only close to statistical significance). We did not assess the perceived risks; however, a hypothesis to be tested in further research is that greater knowledge of what a flood entails may deter engagement, as it can overwhelm individuals with thoughts about potential dangers. Beyond material and infrastructural losses, floods also bring health-related risks such as contaminated water supplies and the spread of waterborne diseases (Nowakowska et al., 2025). Thus, people highly aware of these consequences may refrain from direct engagement out of concern for their own safety and health. This finding is a call to include measurement of how opinions and fear of the disaster consequences might deter engagement in prosocial behaviors.

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Table 4. Estimates for the main effects of analyzed covariates

	Dependent variable							
	Monetary donation		In-kind gifts		Volunteering at the place of residence		Volunteering at the flood site	
Covariate	*OR*	*p*	*OR*	*p*	*OR*	*p*	*OR*	*p*
Affective Empathy	1.42	0.001	1.24	0.032	1.14	0.484	1.13	0.539
Cognitive empathy	1.67	0.001	1.44	0.004	0.97	0.898	0.77	0.374
Awareness of consequences	1.56	0.001	1.26	0.001	1.00	0.990	0.72	0.023
Responsibility ascription	1.72	0.001	1.54	0.001	1.35	0.004	1.06	0.601
Personal norms	2.25	0.001	1.83	0.001	1.43	0.001	1.15	0.166
Guilt	1.02	0.641	1.00	0.909	1.17	0.069	1.27	0.019
Pride	1.25	0.001	1.13	0.022	1.11	0.203	1.22	0.064

Note: OR, odds ratio; *p*, statistical significance.

Regarding H4, our data only partially supported it, as we found interaction effects only between personal norms about helping flood victims and time in predicting monetary donations and in-kind gifts, as well as between responsibility ascription and time in predicting volunteering at the flood site. Notably, the odds of donating money or in-kind goods were lower in the second wave than in the first among those individuals who held stronger personal norms. However, this pattern is consistent with the direction expected from the shorter reference period of Wave 2 relative to Wave 1 and should therefore be interpreted with caution rather than as clear evidence of a genuine shift in motivation (see Section "Data analysis"). A tentative interpretation, offered with this caveat in mind, is that personal norms were most salient immediately after the catastrophe, while over time people might have shifted their focus to other groups in need, perceived that the need had declined, or encountered fewer opportunities to donate, resulting in reduced donations. This interpretation, however, requires further study. Nevertheless, the main effect of personal norms remained significant, underscoring their overall importance in encouraging donations.

For the interaction effect between responsibility ascription and time in predicting volunteering at the flood site, higher responsibility ascription was associated with higher odds of engagement in this type of volunteering in both Wave 2 (compared to Wave 1) and Wave 3 (compared to Wave 1). This increase is notable precisely because it runs against the direction expected from the shorter reference periods of Waves 2 and 3. Literature shows that relationships formed through volunteering, directly witnessing the effects of one's own work, and experiencing positive emotions from a sense of accomplishment may enhance willingness for further engagement (Yang et al., 2024). It suggests that personal contact and feedback from aid recipients constitute plausible variables for future longitudinal research.

H5 was disconfirmed. Guilt was positively associated with on-site volunteering, contrary to the hypothesis that it would be related primarily to low-commitment reparative behaviors. This finding identifies an association between a dispositional tendency to experience guilt following moral-norm violations and the most demanding form of helping examined here. However, the study did not assess flood-specific guilt, perceived moral debt, reparative intentions, contact with victims, or emotional responses during volunteering. Consequently, the result does not demonstrate that guilt motivated on-site volunteering or was intensified through direct exposure to victims' suffering. Future research should distinguish generalized guilt proneness from event-specific guilt and directly examine reparative motives.

Regarding H6, results provided partial support. Pride related to realizing subjective moral norms predicted monetary donations and in-kind gifts, but not volunteering. This finding is similar to evidence showing that low-commitment forms of engagement, such as donations, might be more reliant on the warm glow effect (Andreoni, 1990) and be immediately rewarding compared to volunteering, which requires greater time investment and yields benefits only after some delay (Maki et al., 2016). A hypothesis for further testing is whether being motivated by pride may relate to undertaking immediately rewarding actions such as donations rather than more effortful volunteering.

H7 and H8 were disconfirmed, as no interaction effects were found between guilt related to violating moral norms, pride related to realizing them, and time. However, as discussed above, pride consistently predicted low-commitment prosocial behaviors toward flood victims, while guilt predicted volunteering at the flood site five, seven, and nine months after the catastrophe. These findings support the idea of including moral emotions as key variables in further studies on the NAM in the context of social support provision following floods and other natural disasters.

Theoretical implications

Based on the current data, we put forward observations that extend existing theories of prosocial engagement. Because each construct was evaluated in a separate model rather than jointly, these observations describe a heuristic pattern of differentiated associations across constructs and behaviors, not their combined explanatory power, which is yet to be investigated. Low-commitment support (monetary or in-kind donations; Bekkers & Wiepking, 2011; List, 2011) might be associated with empathy (in line with the EAH; Batson et al., 2015) and positive moral emotions such as pride (Onwezen et al., 2013). Awareness of flood consequences might have a twofold outcome—first, continued giving (low-commitment support), but reduced willingness to volunteer on-site (most demanding support out of the investigated ones). This pattern suggests a boundary condition that could be investigated in future tests of NAM, showing that awareness of consequences showed different directions of association across helping behaviors dependent on their relative costs.

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Personal responsibility and helping norms predicted donations and local volunteering, showing the utility of the NAM perspective for understanding prosocial behaviors in catastrophes, except for these which require most commitment. Finally, guilt was the only moral-emotion measure significantly associated with on-site volunteering, the most demanding form of help. Our results suggest the potential utility of studying such high-commitment behaviors from the perspective of both motivations and outcomes in order to meet the needs of the volunteers and prevent compassion fatigue or deterioration of well-being as a result of engagement.

Practical implications

The identified patterns suggest several tentative directions that organizations may consider. For donations, it may be worth examining whether the co-occurrence of empathy-evoking messaging, information about ongoing flood consequences, and framing giving as a shared responsibility is associated with sustained engagement. Repeated rather than one-off appeals may also be more useful in this context.

For volunteering, responsibility-focused appeals, rather than primarily emotional framing, may be associated with engagement patterns. This could be considered particularly in relation to on-site volunteering, where responsibility ascription may co-occur with guilt-related motivations. The observed association between awareness of consequences and lower on-site engagement may also warrant further attention, although the underlying mechanisms remain unclear. This may indicate the potential relevance of volunteers' psychological support alongside logistical and safety considerations.

Limitations and future research directions

Despite our efforts, this study has certain limitations. Participants were recruited only from registered members of a research panel. The study relied entirely on self-report, making statements susceptible to recall and social desirability bias; we could not verify declarations regarding supporting flood victims, nor gather data on distance from the affected area or personal connection to victims or region. Additionally, the study began in February 2025, about five months after the flood, so the first wave spanned a longer period than subsequent waves, limiting inferences about support dynamics immediately following the disaster. The shorter interval between Waves 2 and 3 aimed to capture sharp declines in helping during the later post-disaster phase, but differences in spacing between waves may also reflect differences in opportunities for helping, not directly measured here. Differences between participants who completed all three, two, or just one wave also indicate possible attrition bias: those completing all three waves had significantly lower odds of in-kind donation and both forms of volunteering than those completing only one or two waves.

We included only one of the seven psychological characteristics, along with age and material status, in each model, rather than a single multivariable model with all seven constructs simultaneously. This approach could inflate Type I error. Consequently, our design establishes that each construct is individually associated with prosocial behavior, limiting the conclusions that can be drawn about the constructs' combined importance. Future studies could address this with a multivariable model including all constructs, ideally with a larger sample to support the added complexity.

Experimental designs, observational methods (e.g., internet traffic data on donations), or qualitative methods could support better understanding helping strategies and motivations. Continuing longitudinal research starting as soon as possible after catastrophic events would help avoid recall bias. Studies could also include people who lived at the flood site when the event occurred, to examine support patterns within affected communities.

Conclusion

This study identified differentiated patterns of association between empathy, components of the NAM, moral emotions, and four forms of prosocial behavior following the 2024 flood in Poland. Affective and cognitive empathy were positively associated with monetary donations and in-kind gifts, but not with either form of volunteering. Awareness of consequences, responsibility ascription, and personal norms were associated with donation behaviors, whereas responsibility ascription and personal norms were positively related to volunteering in participants' place of residence. Guilt was positively associated with on-site volunteering, while awareness of consequences was negatively associated with this behavior. Pride was positively associated with monetary donations and in-kind gifts, but not with volunteering. For most outcomes, there was no statistically significant evidence that associations between the psychological characteristics and prosocial behaviors varied across waves. Overall, the findings demonstrate that correlates of disaster-related helping differ across forms of support and should be examined separately.

Supplementary material. The supplementary material for this article can be found at http://doi.org/10.1017/S0957876526000975.

Data availability statement. The underlying data can be found on Open Science Framework at https://osf.io/u9ybh.

Author contributions. Conceptualization: I.N., M.P.; Data curation: I.N., S.S.; Formal analysis: S.S.; Funding acquisition: I.N.; Investigation: I.N., M.P.; Methodology: I.N., M.P.; Project administration: I.N.; Resources: I.N., M.P.; Supervision: M.P.; Validation: I.N.; Writing – original draft: I.N., S.S., M.P.; Writing – review and editing: I.N., M.P.

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