Perceived Cooperation in Emergency Versus Non-Emergency Situations

Nathalie Mulder

S5135567

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Group number: 18

Supervisor: L. (Lisa) Willemsen, MSc

Second evaluator: prof. dr. A.C. (Anita) Keller

In collaboration with: Paul Bîrzu, Gelbrich Haaijer, Madelief van Holst, Ymke Liezen, and Youki Velthuis.

January 23, 2026

A thesis is an aptitude test for students. The approval of the thesis is proof that the student has sufficient research and reporting skills to graduate but does not guarantee the quality of the research and the results of the research as such, and the thesis is therefore not necessarily suitable to be used as an academic source to refer to. If you would like to know more about the research discussed in this thesis and any publications based on it, to which you could refer, please contact the supervisor mentioned.

Declaration of AI use

AI used in assignment content (modified)

“I acknowledge the use of ChatGPT to generate materials that are included in my work in a modified form.”

Abstract

It is often assumed that emergency situations elicit panic and uncooperative behaviour. However, research increasingly shows behaviour in emergencies as cooperative through shared social identity and group cohesion. While the focus of research has mostly been on actual behaviour in emergencies, less is known about how cooperation is perceived by observers. The present study examines whether people perceive higher cooperation in emergency situations than in non-emergency situations. Using a between-subjects design, 69 psychology students were randomly assigned to one of the two conditions (emergency vs. non-emergency) and watched a short video. Situational framing differed between conditions, while observable behaviour remained consistent. Participants then rated perceived cooperation. Results showed no significant difference between the emergency and the non-emergency conditions. However, perceived leadership, as part of cooperation, was significantly higher in the non-emergency condition than in the emergency condition. This finding contradicts the hypothesized direction. Overall, the findings suggest that cooperation is perceived as similar across conditions, whereas leadership differed between emergency and non-emergency situations. By focussing on perception rather than actual behaviour in emergencies, this study contributes to a better understanding of social expectations in emergency situations. These results highlight the importance of addressing public perceptions in emergency communications and policy.

Keywords: perception, cooperation, emergency

Perceived Cooperation in Emergency Versus Non-Emergency Situations

Emergencies provide a unique situation in which group dynamics and social identity are important in shaping how people respond (Drury et al., 2019). Emergencies like natural disasters, fires or terrorist attacks demand people to make decisions in a short period of time. Often, they have an overwhelming amount of information, which is usually incomplete and presents conflicting perspectives. This makes it difficult to make decisions and to act on them (Bearman et al., 2023). Research shows that emergencies can create a sense of shared social identity that can shape mutual aid, cooperation and collective resilience (Drury et al., 2019). However, literature focusses mostly on actual behaviour in emergency situations while it pays less attention to how cooperation is perceived in such contexts. Perceptions of cooperation are just as important because they shape the expectations about how others are likely to behave. In line with the gateway belief model (Van der Linden et al., 2019), these expectations can influence individual decision making as well as assumptions about human behaviour in emergencies.

The aim of this study is to examine whether individuals perceive higher levels of cooperation in emergency situations than in non-emergency situations. By comparing perceived cooperation across these conditions (emergency vs. non-emergency), this study seeks to contribute to the understanding of social expectations in emergencies. This is important for future discussions on how assumptions about collective behaviour in emergencies may influence the design of policy and responses of individuals in emergency situations.

The Mass Panic Model

In the past, Le Bon's mass panic model dominated views on crowd behaviour in emergency situations. This model described the collective mind as primitive, impulsive, and driven by emotion rather than rational thought and therefore prone to destructive behaviour

(Le Bon, 1895/1960). Crowd responses were presumed to be disproportionate, irrational, highly emotional and asocial in the face of danger. When confronted with fear or threat, it was presumed that this behaviour leads to the disappearance of cooperation and bonds (Drury et al., 2009; Shentu et al., 2018). The mass panic model is widely used in safety engineering and social policies, like the design of public spaces and fire regulations (Drury, 2003). Although most witnesses to emergencies have denied observing such panic-driven behaviour, this is then described as atypical or context-specific.

However, more recent research indicates that panic is rare in emergency situations. Instead, people are characterized by helping each other, showing mutual concern, and collective coordination (Drury, 2003). An example of a situation where there was no panic, but mutual aid was during the air crash of Sioux City in Iowa in 1989. Observers stated that victims were calm and cooperative, rather than panicking and acting in their own self-interest. There was no chaos reported; the people were calm and organised and helped each other (Auf der Heide, 2004). These findings suggest that in emergencies people tend to behave in ways that are collective and prosocial and are influenced by group cohesion and a shared social identity. This is important for the present study because it provides a theoretical basis for examining whether individuals also perceive higher levels of cooperation in emergency situations compared to non-emergency situations.

Social Identity in Emergencies

A key determinant to cooperation, indifference or conflict with others during an emergency is the strength of shared social identities between people at the time (Drury, 2003). Two of the most influential frameworks on this subject are the Social Identity Approach (Tajfel & Turner, 1979) and the Self-Categorization Theory (Turner et al., 1987). These theories explain how we are members of different social groups like football teams, beliefs and jobs and how these groups shape our perceptions and behaviour. When people

share a social identity, they are more likely to believe, feel attracted to and be influenced by these groups (Drury, 2003). This explains how people in a crowd can come together psychologically and how a single physical crowd can consist of multiple psychological crowds, which each act as a group without prior relations with each other (Templeton et al., 2015).

Emergencies can be a powerful trigger for this process. This behaviour can be seen when people face a common threat, danger or experience similar emotions. Here people become united through a shared social identity in relation to the threat (Templeton et al., 2015). This shared identity is often not pre-existing but appears through common fate (Drury et al., 2009). This can break group boundaries and help people form new groups. This allows groups to orient towards shared goals, such as evacuating a building safely or help others reach safety, which can increase expectations of cooperation and facilitate social support and collective action (Ntontis et al., 2020). This process arises from interaction between the environmental factors, such as physical proximity, time pressure and shared threat, and social psychological factors, including perceived common fate, social identity and expectations of cooperation (Drury et al., 2019). This perspective provides a theoretical explanation for why emergency situations may be perceived as contexts in which cooperation is more likely to occur.

Group Cohesion, Shared Social Identity and Perceived Cooperation

In addition to social identity, the concept of group cohesion is important in understanding how cooperative responses in emergencies work. The understanding of this construct facilitates our insight into group phenomena and explains the characteristics that are essential for the preservation of groups (Piper et al., 1983). Group cohesion refers to a group's feelings of belongingness or attraction to the group and the tendency for a group to stick

together and remain united in pursuit of the satisfaction of the members' needs (Stokes, 1983; García-Guiu et al., 2015).

Previous research conceptualizes group cohesion as a multifaceted concept (Carron et al., 1985). Indicators are cooperation, emotions, solidarity and common fate (Willemsem et al., 2025). Cooperation involves coordinated actions towards shared goals, with mutual help and sharing resources. Such as assisting each other when evacuating a building or when following a procedure (Castañer & Oliveira, 2020). Shared emotions develop when an emotional event strikes collectively leading to an emotional climate within a group (Rimé, 2007). Common fate refers to the collective directional movement that increases interdependence between people (Wilson & Mansour, 2020). Solidarity refers to mutual support and helping behaviour, even with individuals who were previously strangers (Drury et al., 2019). Together, these components illustrate how group cohesion operates as a dynamic process that facilitates collective action in emergencies.

Research has demonstrated how these components of cohesion operate in crisis situations through the formation of a shared social identity. Templeton et al. (2018) found that a shared social identity in crowds can form a sense of unity in which people helped each other in moments of crisis. Ntontis et al. (2020) showed with research about flood-affected communities that shared social identity and cohesion within groups can help provide people with crucial social support. Drury (2003) demonstrated that through a shared identity crowds respond in terms of mutual cooperation and coordination in emergency situations. Together, these studies show that a social identity in emergencies is formed through common fate, shared emotions, solidarity and collective interaction which in turn form the basis for group cohesion and cooperative behaviour in emergencies.

The mechanisms underlying cooperative behaviour in emergencies are well documented. However, less is known about whether these dynamics are also recognised by

observers. Understanding if cooperation is perceived in emergency situations is crucial because perceptions of cooperation can shape expectations about how people are likely to behave during such contexts. If people trust that others will cooperate, then they are more willing to cooperate themselves (Balliet & Van Lange, 2013).

The Importance of Perceived Cooperation

Current literature shows strong evidence that emergencies can lead to greater group cooperation (Drury, 2003). However, this evidence is mainly focused on naturalistic observations or lab simulations. It often focuses on trained professionals or disaster survivors rather than ordinary individuals, such as students. While these studies offer valuable insights, they provide limited understanding of how such behaviour is perceived. This distinction is crucial because assumptions about emergency behaviour do not only shape individual expectations, but also play a significant part in emergency planning, risk communication, and public policy (Drury et al., 2019). Policy makers often rely on observational information rather than direct personal experiences when designing such strategies. If cooperative behaviour is not expected, then policies might still be focussed on outdated models, like mass panic.

Ethically and practically, real emergencies cannot be recreated in their full intensity, but experimental methods can manipulate situational framing to study perceived cooperation in a controlled way. Despite this potential, few studies have experimentally examined whether emergencies are perceived as more cooperative, and existing research has often lacked an explicit comparison group. The present study addresses this gap by isolating the effect of emergency framing through the comparison of perceived cooperation across emergency and non-emergency situations.

By focussing on perception instead of actual behaviour, this study contributes to both theory and practice. Theoretically, this study uses group cohesion and the Social Identity

Theory to understand why people might expect more cooperation in emergencies than in non-emergency situations (Willemsen et al., 2025). Practically, the understanding of people's perception of cooperation during emergency and non-emergency situations could help risk communication and emergency planning (Drury et al., 2019). If people expect that in emergency situations people would cooperate more, then authorities could send the behaviour of people in the right direction. This could be applied as messages that reinforce shared identity and cooperation. If expectations about cooperation are lower, then authorities could focus on strategies that highlight trust and shared goals. In both cases the understanding of perceptions is important for designing effective emergency response strategies that do not rely on outdated panic models.

Overview of the Current Study

The current study uses a between-groups experimental design. Participants are randomly assigned to one of two conditions (emergency vs. non-emergency) in which they watch a short video depicting individuals leaving a room. The situational framing differs between the conditions, with either an emergency or a non-emergency situation. By experimentally manipulating the situational framing, the study can determine whether simply presenting a scenario as an emergency influences participants' expectations of cooperative behaviour. Drawing on the social identity approach and previous research on cooperation in emergencies (Drury, 2003; Drury et al., 2009; Templeton et al., 2015), the present study hypothesizes that participants will perceive higher cooperation in the emergency condition than in the non-emergency condition.

Methods

Participants

A total of 77 participants from the first year of the English and Dutch track in Bachelor of Psychology at the University of Groningen took part in the present study. Following data screening and application of exclusion criteria, eight participants were removed as a result of a failed attention check. The final sample consisted of 69 participants (51 female, 14 male, 3 non-binary, 1 gender not specified). Participants' ages ranged from 18 to 38 years (M = 19.6, SD = 2.5). All participants met the inclusion criteria, which required them to be fluent in English and aged 18 or above. All participants were recruited through the university's study programme (SONA), which compensated them with course credit. A post-hoc sensitivity analysis using G*Power for the hypothesis that people perceive higher cooperation in the emergency condition than in the non-emergency condition indicates that this sample allows us to detect a medium effect size (d = 0.68) with a power of 80% (α = .05).

Procedure and Design

Ethical approval for this online study was obtained from the Ethical Committee of the Faculty of Behavioural and Social Sciences at the University of Groningen (PSY-2526-S-0043). Data were collected via an online questionnaire, which was created and administered using the Qualtrics platform (Qualtrics, Provo, UT). It was published on SONA from November 14 to November 26, 2025. The participants were recruited through this platform. The study employed a between-subjects experimental design with one independent variable and situational condition (emergency vs. non-emergency). The dependent variable was perceived cooperation. Prior to the start of the online study, participants had to give informed consent. The first section of the questionnaire contained demographic information. Once the participants filled in this part of the questionnaire, they were randomly assigned to one of two conditions (emergency vs non-emergency). The participants were notified what the conditions

were, however, they were not notified in which condition they were put. After this, they were instructed to observe the behaviour of the individuals depicted. Participants were instructed to view the video in full-screen mode on the device and it was permitted to be replayed as many times as needed. Next, they were presented with a video that corresponded with the condition they were in. After the participants finished watching the video, they filled in the attention check. If they passed the check, participants could complete a series of Likert-scale items, measuring the extent of which they believed the group in the video behaved. The questionnaire contained the following scales: Common Fate, Solidarity, Cooperation, Joint Intention, and Emotions (see Appendix A). However, Common Fate, Solidarity, Joint Intention and Emotion were not in the scope of this thesis and were therefore removed. Once the questionnaire was completed, the participants were debriefed and thanked for their participation. Altogether, the questionnaire took 25 minutes to complete, and the participants were rewarded with 0.4 SONA credits.

Measures

Experimental Condition

Participants were randomly presented with one of four pre-recorded video clips that were developed in a research project by Willemsen et al. (2025). Each video depicted either three or four people exiting individual cubicles, where they were filling in a mock survey, and moving toward an exit. The videos differed in their situational framing (emergency vs. non-emergency), which was coded as 0 = non-emergency and 1 = emergency. In two of the four videos, the situation was framed as an emergency situation. The individuals heard a fire alarm and a voiceover telling them that they had to evacuate their cubicle and move toward the exit. When they followed the exit signs and went through a door, they encountered a physical obstruction, which consisted of stacked chairs and tables in front of the exit. The obstacle required a degree of effort to pass. The other two videos followed the same structure but were

framed as a non-emergency situation. Instead of an alarm, the individuals heard an announcement stating that the current assignment was over and that they had to move toward the exit. These videos had the same obstacle at the exit.

Attention Check

To ensure participants were paying attention, they were asked to identify the sounds they had heard in the video. They could select multiple answers from the following options: fire alarm, announcement, tire screeching, birds chirping, children playing, and not hearing any sound. Participants who failed the attention check were excluded from the analyses.

Cooperation Scale

The Cooperation scale consisted of six items covering five dimensions of cooperation (Willemsen et al., 2025). An example item is “They worked well together.” Item wording was modified from Willemsen et al. (2025), whose respondents focused on their own experience in the experiment, to instead reflect a perceiver's perspective ($\alpha = .84$). We conducted an exploratory factor analysis on the cooperation items using principal axis extraction with oblimin rotation to measure the underlying structure. This measure showed that five of the six items loaded onto one single cooperation factor, and one item reflected a single construct (leadership). Therefore, the five cooperation items were combined into a single scale, and the leadership item was analysed separately.

Analysis

To answer the hypothesis, analyses were conducted using JASP (2025). As our data violated the assumption of normality, we conducted Welch’s independent t-test to test our hypothesis.

Results

Preliminary Analysis

Descriptives

See Table 1 for descriptive statistics and correlations.

Table 1

Descriptive Statistics and Pearson Correlations Between Main Variables (N = 69)

Variable	M	SD	1
1. Condition	0.49	0.50	-.01
2. Cooperation	0.08	1.62	−
3. Leadership	0.38	1.97	.18

Note. Condition coded as 0 = non-emergency, 1 = emergency. *$p < .001$.

Assumption Checks

The Shapiro-Wilk test of normality of the residuals was significant for cooperation ($W = 0.94$, $p = .001$). These results indicate a deviation from normality. The Levene's test for equality of variances was significant, $F(1, 67) = 7.39$, $p = .008$. This suggests that the assumption of equality of variances was violated. For leadership, the Shapiro-Wilk test was conducted and was significant ($W = 0.95$, $p = .005$). Which also indicates that the assumption of normality was deviant. Levene's test was also significant, $F(1, 67) = 5.50$, $p = .022$, indicating that this assumption was violated. Because both the assumption of normality and homogeneity of variances were violated for cooperation and leadership, the more robust Welch test was used for the main analysis. This test does not assume equal variances and is relatively robust against the violation of the normality assumption.

Exploratory Factor Analysis

To examine whether the cooperation items are part of a single underlying construct, an exploratory factor analysis (EFA) was conducted on the six cooperation items. The Kaiser-Meyer-Olkin (KMO) of sample adequacy was conducted and was acceptable ($KMO = .79$).

Also, Bartlett's test of sphericity was significant, χ^2 (15) = 298.88, $p < .001$. These results indicate that variables were correlated, and factor analysis is appropriate. The analysis showed that five items loaded onto one factor, labelled as cooperation (items 1, 2, 3, 4 and 6). Item 4, see Table 2, is a weaker indicator of the factor. This item was retained in the scale because it still contributed conceptually to the cooperation construct. It still loaded above the minimum threshold of 0.40 for factor inclusion. Removing the item did not substantially improve the reliability of the scale. Therefore, it could be kept without compromising the cooperation measure. The new cooperation construct is stronger because the resulting reliability was higher ($\alpha = .893$), whereas item 5 loaded onto a separate factor. It was treated as a separate variable and labelled leadership. Factor loadings are presented in Table 2.

Table 2

Exploratory Factor Analysis

Item	Factor 1 (Cooperation)	Uniqueness
Cooperation_2	.95	.10
Cooperation_1	.92	.15
Cooperation_6	.88	.23
Cooperation_3	.75	.43
Cooperation_4	.46	.79
Cooperation_5 (leadership)	–	.97

Note. Factor loading below .30 is not displayed.

Main Analysis

Condition was coded as 0 (non-emergency) and 1 (emergency).

Cooperation

To test the hypothesis that people perceive higher cooperation in the emergency condition than in the non-emergency condition, a Welch's independent samples t-test was conducted. The analysis showed no significant difference in cooperation between the emergency ($M = 0.05$, $SD = 1.85$) and non-emergency ($M = 0.10$, $SD = 1.38$) condition,

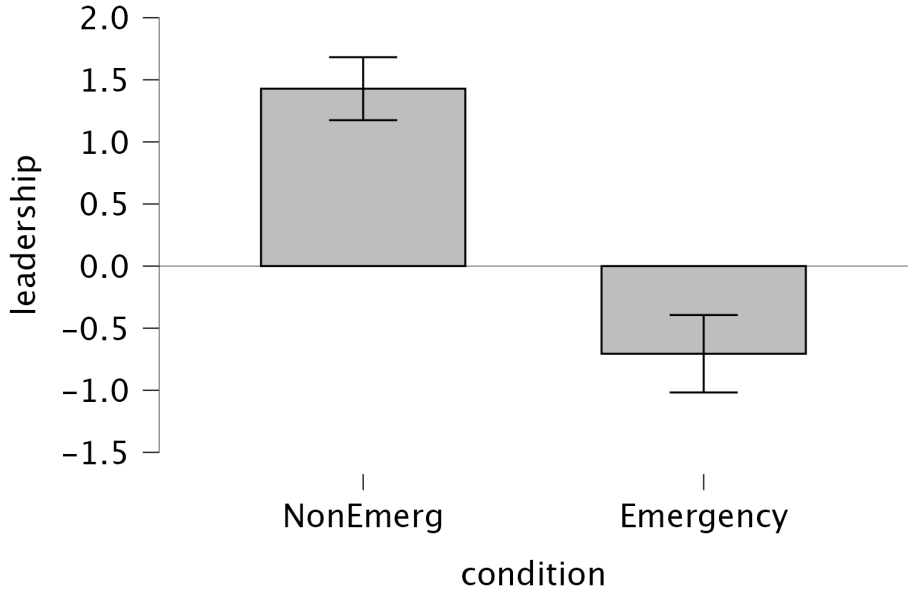
$t(61.07) = 0.11$, $p = .911$, $d = 0.03$, 95% *CI* [-0.45, 0.50]. This indicates that the difference between the emergency and the non-emergency condition is not statistically meaningful. Thus, the hypothesis that perceived cooperation would be higher in the emergency condition than in the non-emergency condition was not supported by the data.

Leadership

Leadership was also examined since it was a part of the cooperation scale. We examined whether perceived leadership was higher in the emergency condition than in the non-emergency condition. The Welch's t-test that was conducted showed that there was a significant difference, $t(63.95) = 5.31$, $p < .001$, $d = 1.28$, 95% *CI* [0.75,1.80]. Participants in the non-emergency condition reported higher perceived leadership ($M = 1.43$, $SD = 1.50$) than the participants in the emergency condition ($M = -0.71$, $SD = 1.82$). This indicates that the participants perceived leadership as higher in the non-emergency condition instead of the emergency condition as shown in Figure 1. Rather than supporting the hypothesis, the results contradict it, as the observed effect was in the opposite direction to that predicted.

Figure 1

Mean Perceived Leadership by Condition (Emergency vs. Non-emergency)



Note. Bars represent means; error bars represent standard errors.

Discussion

The present study examined whether people perceive higher levels of cooperation in emergency situations versus non-emergency situations. Building on earlier research that challenged the mass panic model (Auf der Heide, 2004; Drury, 2003) and instead focussed on the role of shared social identity, group cohesion and cooperation in emergencies (Drury, 2003; Drury et al., 2009; Drury et al., 2019), it was hypothesised that emergency situations would be perceived as more cooperative than non-emergency situations. However, the results showed no significant difference in perceived cooperation in the two conditions (emergency vs. non-emergency). These findings suggest that, although previous research has shown that in emergency situations people tend to act more cooperatively than panicked (Drury, 2003), these cooperative behaviours are not perceived as more pronounced by observers. In addition, an unexpected finding emerged for leadership. The participants perceived higher levels of leadership in the non-emergency condition than in the emergency condition. Therefore, the hypothesis was not supported for leadership, as the observed effect was in the opposite direction than predicted. Even though emergency situations are theorised to have more cooperation, such results may not be perceived by observers, regarding leadership processes. These findings contribute to future research on social behaviour in emergencies by not only looking at actual behaviour but also at the perceptions of behaviour.

Theoretical Implications

Theoretically, this study is important for existing models of crowd behaviour by highlighting a distinction between actual cooperation and perceived cooperation. While previous research demonstrated that emergencies could foster cooperative behaviour through a shared social identity, which promotes mutual aid and coordinated action (Ntontis et al., 2020), the current findings suggest that perceived cooperation does not differ between emergency and non-emergency situations. This finding aligns with Willemsen et al., (2025)

and suggests that cooperation was neither perceived nor experienced regardless of situational framing between the two conditions (emergency vs. non-emergency). This makes the research important because perceptions of cooperation influence expectations about human behaviour (Van der Linden et al., 2019), which can shape decision making and policy assumptions (Drury et al., 2019).

The findings can be interpreted in light of the Social Identity Theory, which emphasizes the role of a shared social identity in fostering cooperation during emergencies. Although previous research found that shared social identity can promote mutual aid and cooperation, the current study indicates that cooperation is not necessarily perceived as stronger in emergency situations compared to the non-emergency situations. This suggests that perceptions of cooperation may depend less on the assumptions of the Social Identity Theory and more on the visibility of cooperative behaviour and existing beliefs about how people behave in emergency situations. However, the findings align with the gateway belief model (Van der Linden et al., 2019) which proposes that beliefs about collective behaviour can influence broader attitudes and actions. If emergencies are not perceived as more cooperative than non-emergencies, then these perceptions will maybe limit the extent to which shared identity processes are anticipated or expected.

Moreover, the difference in perceived leadership might indicate that observers may rely more on traditional ideas of leadership, such as the presence of a clear and identifiable leader. This suggest a gap between theoretical models about the functioning of cooperation in emergencies and how cooperation is perceived by observers.

Practical Implications

This study also has important practical implications for emergency management, risk communication and public policy. It is crucial to understand how groups respond in emergency situations, as it shapes policy and real-life practice. From a policy perspective, it is

important to have correct assumptions about emergency situations, because they have consequences on how people act in these situations. A lot of emergency planning has derived from emergency assumptions from the mass panic model, which explains that crowds show uncooperative and irrational behaviour (Le Bon, 1895/1960). Although research has now consistently shown that panic is rare and people tend to act cooperatively in emergencies (Drury, 2003), the current findings suggest that perceived cooperation does not differ between emergency and non-emergency situations.

These findings between actual behaviour and perceived cooperation have implications for public expectations and trust during emergencies. If people expect others not to cooperate in emergencies, then this may also influence the likelihood of engaging in cooperative behaviour themselves (Balliet & Van Lange, 2013). Emergency communication strategies could therefore benefit from hearing examples of how people behave cooperatively in emergency situations. These types of messages about how people behaved during emergencies could help align the public's perceptions with the cooperative dynamics that often emerge in real emergencies.

The finding that perceived leadership in non-emergency situations was higher than in emergency situations suggest that collective forms of coordination may be overlooked or misunderstood. Emergency authorities may benefit from making coordination efforts more visible and they should frame leadership as a collective process instead of an individual process. By moving away from outdated models on emergencies and focussing more on present findings and assumptions, policymakers can design more effective socially informed response strategies.

Limitations and Future Directions

This study needs to acknowledge some limitations, which are also important for promising directions in future research. First, the study is underpowered to detect small

effects. The sample size was sufficient to detect medium-sized effects, but it is possible that more subtle differences in perceived cooperation remained undetected. Future research should employ larger sample sizes to increase statistical power. This would not only improve the ability to detect small effects but may also be useful in examining potential moderating variables.

Second, the study relies on a sample size which focussed on university students, this limits the generalisability of the findings. Students may differ from the general public in life experiences, age, risk perception and exposure to emergencies. As a result, their perceptions of cooperation in emergencies may not fully reflect those of other demographic groups. Research in the future should aim to collect more diverse samples. Including more categories of people such as older adults, would determine whether the observed patterns are specific to the student population or represent broader social expectations.

The video stimuli depicted relatively mild and controlled emergency situations. This was necessary for practical and ethical reasons; however, it may have limited the ecological validity of the study. The emergency situation may not have been sufficiently intense to trigger strong images of cooperation. Future studies could address this limitation by adapting the intensity and clarity of emergency cues. For example, time pressure, levels of perceived threat or variations in the ambiguity of the situations could be manipulated.

These limitations highlight important opportunities for future research. By increasing the sample size, broadening the sample population and enhancing the realism of the stimuli, future research can build on the current study and further clarify how cooperation is perceived in emergencies.

Strengths of the Study

A key strength of this research was the use of video-based manipulations and the high level of experimental control that it provides. The conditions (emergency vs. non-emergency)

were identical in terms of group size, setting, visual content and physical obstacles. Only the situational framing was different (alarm vs. neutral announcement). This ensures that differences in cooperation can be attributed to the framing of the situation rather than to behavioural or contextual differences. Video-based manipulations also provide an ethical and practical method for research on emergency situations, which cannot be recreated in real life settings. The inclusion of a comparison group is also a strength. Adding the comparison group makes it possible to determine whether observed differences in perceived cooperation can be attributed to the emergency context, rather than to other features of the video. Another strength is the focus on the perception of behaviour rather than actual behaviour. Perceptions of behaviour are important for shaping expectations and policy decisions. By examining how cooperation is perceived by observers, the study addresses a gap in current literature.

Conclusion

The present study illustrates that emergency situations are not necessarily perceived as more cooperative than non-emergency situations. Even though previous research has demonstrated that actual behaviour in emergencies is often characterized by mutual aid and cooperation (Drury, 2003), the findings of this study highlight important distinctions between perceived and actual behaviour in emergencies. While cooperation did not differ between the conditions (emergency vs. non-emergency), leadership was perceived as lower in the emergency condition rather than in the non-emergency condition, suggesting that forms of cooperation may be less visible or recognised in emergency situations. Together, these findings challenge assumptions about social behaviour in emergencies by focussing not only on what people do but also on what others expect people to do. This is crucial for the understanding of the expectations about cooperation, which shape individual behaviour. By shifting the attention from panic-based assumptions to perception-based assumptions this study contributes to a more realistic and nuanced understanding of cooperation in emergencies.

References

Auf der Heide, E. (2004). Common misconceptions about disasters: panic, the "Disaster syndrome," and looting. In M. O'Leary (Ed.), The First 72 Hours: A community approach to Disaster Preparedness (pp. 340–380). iUniverse.

Balliet, D., & Van Lange, P. A. M. (2013). Trust, Conflict, and Cooperation Across 18 Societies. *Perspectives On Psychological Science*, *8*(4), 363–379. https://doi.org/10.1177/1745691613488533

Carron, A., Widmeyer, W., & Brawley, L. (1985). The development of an instrument to assess cohesion in sport teams: the Group Environment Questionnaire. *Journal of Sport Psychology*, *7*(3), 244–266. https://doi.org/10.1123/jsp.7.3.244

Bearman, C., Hayes, P., & Thomason, M. (2023). Facilitating teamwork in emergency management: The team process checklist. *International Journal of Disaster Risk Reduction*, *94*, 103775. https://doi.org/10.1016/j.ijdrr.2023.103775

Carron, A. V., Widmeyer, W. N. Brawley, L. R. (1985) The development of an instrument to assess cohesion in sport teams: The Group Environment Questionnaire. Journal of Sport Psychology, 7(3), 244-266.

Castañer, X., & Oliveira, N. (2020). Collaboration, Coordination, and Cooperation Among Organizations: Establishing the Distinctive Meanings of These Terms Through a Systematic Literature Review. *Journal Of Management*, *46*(6), 965–1001. https://doi.org/10.1177/0149206320901565

Drury, J. (2003). Social identity as a source of strength in mass emergencies and other crowd events. *International Journal of Mental Health*, *32*(4), 77–93. https://doi.org/10.1080/00207411.2003.11449599

Drury, J., Carter, H., Cocking, C., Ntontis, E., Guven, S. T., & Amlôt, R. (2019). Facilitating collective psychosocial resilience in the public in Emergencies: Twelve

recommendations based on the Social Identity Approach. *Frontiers in Public Health*, *7*, 141. https://doi.org/10.3389/fpubh.2019.00141

Drury, J., Cocking, C., & Reicher, S. (2009). Everyone for themselves? A comparative study of crowd solidarity among emergency survivors. *British Journal of Social Psychology*, *48*(3), 487–506. https://doi.org/10.1348/014466608x357893

García-Guiu, C., Molero, F., Moya, M., & Moriano, J. A. (2015). Authentic leadership, group cohesion and group identification in security and emergency teams. *Psicothema, 27*(1), 59–64. https://doi.org/10.7334/psicothema2014.161

Le Bon, G. (1960), *The crowd: A study of the popular mind.* Viking Press. (Original work published 1895)

Ntontis, E., Drury, J., Amlôt, R., Rubin, G. J., & Williams, R. (2020). Endurance or decline of emergent groups following a flood disaster: Implications for community resilience. *International Journal Of Disaster Risk Reduction*, *45*, 101493. https://doi.org/10.1016/j.ijdrr.2020.101493

Piper, W. E., Marrache, M., Lacroix, R., Richardsen, A. M., & Jones, B. D. (1983). Cohesion as a Basic Bond in Groups. *Human Relations*, *36*(2), 93–108. https://doi.org/10.1177/001872678303600201

Rimé, B. (2007). The Social Sharing of Emotion as an Interface Between Individual and Collective Processes in the Construction of Emotional Climates. *Journal Of Social Issues*, *63*(2), 307–322. https://doi.org/10.1111/j.1540-4560.2007.00510.x

Shentu, T., Ma, J., & Guo, Y. (2018). Social attachment shapes emergency responses: Evidence from a postfire study. *Social Behavior and Personality an International Journal*, *46*(1), 139–150. https://doi.org/10.2224/sbp.6946

Stokes, J. P. (1983). Components of Group Cohesion. *Small Group Behavior*, *14*(2), 163–173. https://doi.org/10.1177/104649648301400203

Tajfel, H & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G, Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33-47). Monterey, Ca Brooks/Cole.

Templeton, A., Drury, J., & Philippides, A. (2015). From Mindless Masses to Small Groups: Conceptualizing Collective Behavior in Crowd Modeling. *Review Of General Psychology*, *19*(3), 215–229. https://doi.org/10.1037/gpr0000032

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell. M. S. (1987). *Rediscovering the social group: A self-categorization theory.* Oxford, UK: Basil Blackwell.

Van der Linden, S., Leiserowitz, A., & Maibach, E. (2019). The gateway belief model: A large-scale replication. *Journal of Environmental Psychology*, *62*, 49–58. https://doi.org/10.1016/j.jenvp.2019.01.009

Willemsen, L.J., Greijdanus, H.J.E., Hindriks, F.A., & Postmes, T. (2025). Processes underpinning spontaneous cooperation during emergency situations [Manuscript for publication]. Department of Social Psychology, University of Groningen.

Appendix A

Qualtrics Questionnaire

1. Research information	**'Perceived Group Cohesion during Emergency vs. Non-emergency Situations' (EC code: PSY-2526-S-0043)** **Why do I receive this information?** You are being invited to participate in the current research as you are 18-years or older. This is the only requirement for participation in this study. This information page is intended to provide you with the necessary information for you to make an informed decision about participating in this study. The researchers who are conducting this study all belong to the Social Psychology Department at the University of Groningen. The research team is made up of the following members: Lisa Willemsen (PhD candidate and project coordinator), Dr. Hedy Greijdanus (Principal investigator), Prof.dr. Tom Postmes (Co-investigator) Prof.dr. Russell Spears (Co-investigator) Prof.dr. Frank Hindrinks (Co-investigator), Paul Birzu (Third year Bachelor student), Gelbrich Haaijer (Third year Bachelor student), Ymke Liezen (Third year Bachelor student), Nathalie Mulder (Third year Bachelor student), Madelief van Holst (Third year Bachelor student), Youki Velthuis (Third year Bachelor student) **Do I have to participate in this research?** Your participation is completely voluntary. There are no consequences for ending your participation at any time. **Why this research?** The intention of this research is to understand observer differences in group cohesion during an emergency vs. a non-emergency situation. **What do we ask of you during the research?** This experiment is approximately 25 minutes long and requires your once-off participation. There is no follow-up. Part 1: After you have read the information about the study (this page), you will be asked to provide informed consent. The experiment does not begin until you have given consent. Part 2: You will be asked to watch one video. This will either be an emergency situation or a non-emergency situation. You will then be asked to complete a series of questionnaires that will examine different aspects of group cohesion. *As compensation, you will receive 0.4 SONA credits.* **What are the consequences of participation?** In participating, you will contribute to knowledge gain about group cohesion in different situations **How will we treat your data?** We will collect quantitative data from the questionnaires. The de-identified and aggregated data collected during this experiment will be disseminated in academic journals and at conferences. De-identified data is data that has your personal data removed. The data will be stored in a secure folder on the UG Y-drive. All data collected from you will be stored for 10 years. In order to be transparent about our research practices, the de-identified and aggregated data from this study will be published on open-source websites. De-identified data might also be provided to external researchers for replication purposes. **What else do you need to know?** You may always ask questions about the research. You can do so by emailing Lisa Willemsen (l.j.willemsen@rug.nl). Do you have questions/concerns about your rights as a research participant or about the conduct of the research? You may also contact the Ethics Committee of the Faculty of Behavioural and Social Sciences of the University of Groningen: ec-bss@rug.nl Do you have questions or concerns regarding the handling of your personal data? You may also contact the University of Groningen Data Protection Officer: privacy@rug.nl *As a research participant, you have the right to a copy of this research information.*
2. Consent	**Informed consent for 'Perceived Group Cohesion during Emergency vs. Non-emergency Situations' (EC code: PSY-2526-S-0043)** I have read the information about the research. I have had enough opportunity to ask questions about it. I understand what the research is about, what is being asked of me, which consequences participation can have, how my data will be handled, and what my rights as a participant are. I understand that participation in the research is voluntary. I myself choose to participate. I can stop participating at any moment. If I stop, I do not need to explain why. Stopping will have no negative consequences for me. Below I indicate what I am consenting to. *You have a right to a copy of this consent form.* Consent to participate in the research: o Yes, I consent to participate. (1)

	o No, I do not consent to participate. (2) Consent to processing my personal data: o Yes, I consent to the processing of my personal data as mentioned in the research information. I can ask to have my data withdrawn and erased. I can also ask for this if I decide to stop participating in the research. (1) o No, I do not consent to the processing of my personal data. (2)
3. Demographics	Please enter in your SONA identification number. What is your gender? o Female (1) o Male (2) o Non-binary (3) o Prefer to self-describe: (4) o Prefer not to say (5) How old are you?
4. Instructions	READ THE FOLLOWING INFORMATION CAREFULLY 1. You need to have a stable, good internet connection. 2. Please make sure you have the **volume on** when watching the video. 3. Watch the video in **full screen mode** to avoid cutting off parts of the video. 4. Complete this survey in one go **without taking a break.** If you exit out the survey, you will not be able to come back in. Thank you for your participation. You may now continue on to the study.
5. Video	Watch the video below. Pay close attention to how people behave, alone as well as together. You can watch the video as many times as you like. When you are ready, click the arrow to move on to the survey questions.
6. Attention check	Which sounds did you hear? ☐ Fire alarm (1) ☐ Announcement (2) ☐ Tire screeching (3) ☐ Bird chirpings (4) ☐ Children playing (5) ☐ I did not hear any sound (6)
7. Attention check failed	Unfortunately, this study requires you to have the volume on. As this was not possible for you, you cannot participate further in this study. *If you have questions regarding this, please contact Lisa Willemsen at l.j.willemsen@rug.nl for further information*
8. Common fate	Think about how the people in the video behaved, then please indicate the extent you agree with the following statements.

Strongly disagree	Disagree	Somewhat disagree	Neither disagree or agree	Somewhat agree	Agree	Strongly agree
(-3)	(-2)	(-1)	(0)	(1)	(2)	(3)

	They were all in it together	o	o	o	o	o	o	o
	They all shared the same fate	o	o	o	o	o	o	o
	It was all of them against the situation	o	o	o	o	o	o	o
	It was everyone for themselves	o	o	o	o	o	o	o

9. Belonging (Solidarity)

Think about how the people in the video behaved, then please indicate the extent you agree with the following statements.

	Strongly disagree (-3)	Disagree (-2)	Somewhat disagree (-1)	Neither disagree or agree (0)	Somewhat agree (1)	Agree (2)	Strongly agree (3)
They were united	o	o	o	o	o	o	o
They felt a sense of group belonging	o	o	o	o	o	o	o
They excluded one or more individuals	o	o	o	o	o	o	o
They felt connected with one or more of the others	o	o	o	o	o	o	o
They were like strangers to each other	o	o	o	o	o	o	o

10. Identification (Solidarity)

Think about how the people in the video behaved, then please indicate the extent you agree with the following statements.

	Strongly disagree (-3)	Disagree (-2)	Somewhat disagree (-1)	Neither disagree or agree (0)	Somewhat agree (1)	Agree (2)	Strongly agree (3)

	They identified with each other	o	o	o	o	o	o	o
	They looked like they felt solidarity with the others in the group	o	o	o	o	o	o	o
	They looked like they were be glad to be in the group	o	o	o	o	o	o	o
	They were similar to each other	o	o	o	o	o	o	o
	They had a lot in common with each other	o	o	o	o	o	o	o

11. Entitativity (Solidarity)	Think about how the people in the video behaved, then please indicate the extent you agree with the following statements.							
		Strongly disagree (-3)	Disagree (-2)	Somewhat disagree (-1)	Neither disagree or agree (0)	Somewhat agree (1)	Agree (2)	Strongly agree (3)
	They were a unit	o	o	o	o	o	o	o
	They felt a sense of togetherness	o	o	o	o	o	o	o
	They felt that they could act as one	o	o	o	o	o	o	o
	They felt that they worked well together	o	o	o	o	o	o	o

12. Cooperation	Think about how the people in the video behaved, then please indicate the extent you agree with the following statements.

	Strongly disagree (-3)	Disagree (-2)	Somewhat disagree (-1)	Neither disagree or agree (0)	Somewhat agree (1)	Agree (2)	Strongly agree (3)
They worked well together	o	o	o	o	o	o	o
They worked together successfully	o	o	o	o	o	o	o
They worked together spontaneously	o	o	o	o	o	o	o
Working together was discussed before they did it	o	o	o	o	o	o	o
One person took a leadership position	o	o	o	o	o	o	o
Working together looked like it was a communal decision	o	o	o	o	o	o	o

13. Emotion

Think about the emotions that you saw the people in the video experiencing. Which emotions did you perceive?

"In my opinion, the people in the video felt…"

	Strongly disagree (-3)	Disagree (-2)	Somewhat disagree (-1)	Neither disagree or agree (0)	Somewhat agree (1)	Agree (2)	Strongly agree (3)
energised	o	o	o	o	o	o	o

alarmed	o	o	o	o	o	o	o
excited	o	o	o	o	o	o	o
confused	o	o	o	o	o	o	o
startled	o	o	o	o	o	o	o
surprised	o	o	o	o	o	o	o
scared	o	o	o	o	o	o	o
anxious	o	o	o	o	o	o	o
eager	o	o	o	o	o	o	o
stressed	o	o	o	o	o	o	o
like this was fun	o	o	o	o	o	o	o
there was a sense of urgency	o	o	o	o	o	o	o
enthusiastic	o	o	o	o	o	o	o
in control	o	o	o	o	o	o	o
uncertain	o	o	o	o	o	o	o

14. Debrief

Debrief for 'Perceived Group Cohesion during Emergency vs. Non-emergency Situations' (EC code: PSY-2526-S-0043)

Thank you for participating!

Your participation will help us understand how people perceive group cohesion in different situations. We expect that there is a difference in how observers perceive cooperation, common fate, perceived emotions, joint intentions, and solidarity in an emergency (vs. non-emergency) situation compared to the lived experiences of people in those situations.

More information? If you want to receive the results once they are available or have any other questions, please email Lisa Willemsen (l.j.willemsen@rug.nl).

Appendix : AI Use Summary

- AI system: ChatGPT (OpenAI). https://chatgpt.com
- Final prompts used:

  “What exactly is the mass panic model and how does it fit with my research question?”

  “When do you use the Welch’s t-test instead of the standard independent t-test?”

  “What are possible limitations for my study?”
- Use case: the prompt about the mass panic model was used to help me understand what the mass panic model is and how it was relevant for my study. The second prompt was used to gather information about which t-test I should use in the study. The last prompt was used to explore potential limitations and to give me an initial outline idea.
- Modifications: for the prompt about the mass panic model, I read the output and found inspiration on how I wanted to continue my introduction. The theory suited my research question, so I searched for articles that matched the AI generated output. For the second prompt I read the output and gathered understanding on which t-test was best suited for my study. Then I used JASP to run the analysis. The final prompt gave me ideas for possible limitations. I read them and thought about possible solutions and other limitations. This helped me form an outline for my limitations section. I rewrote all AI-generated text and integrated it with my own research.