

# **The Effects of Emergency Context on Shared Social Identity and Perceived Emotions**

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### **Abstract**

Groups can emerge during disasters or emergencies. Research indicates that these emergent groups have a shared social identity. In the current study, the relationship between emergent groups in emergency contexts and the development of a shared social identity through measures of common fate and solidarity was investigated, through an observer's perspective. Additionally, the role of perceived emotions in these emergent groups was considered. An experimental between-subjects research design ( $N = 69$ ) in the form of a questionnaire with an emergency and a non-emergency condition was employed. Participants viewed a video of an emergent group in either an emergency or non-emergency situation, and rated common fate, solidarity and emotions based on what they had observed in the video. It was hypothesized that ratings of observed common fate and solidarity would be higher in the emergency condition, compared to the non-emergency condition. Additionally, it was hypothesized that ratings of perceived emotions would be higher in the emergency condition, compared to the non-emergency condition. Results showed that common fate and solidarity were not rated significantly higher by observers in the emergency condition compared to the non-emergency condition. Anxious and uncertain emotions were rated significantly higher in the emergency condition, compared to the non-emergency condition. The results are relevant for researchers in the social psychology and sociology fields, and for the construction of emergency-management plans. Future research should be conducted to further determine the effects of emergency context on shared social identity and emotions in emergent groups.

*Keywords:* emergent group, emergency versus non-emergency, shared social identity, perceived emotions

## **The Effects of Emergency Context on Shared Social Identity and Perceived Emotions**

In everyday life, people form groups for a great multitude of reasons. They form friendship groups, religious groups, groups at work, and they even form groups with people that they previously did not know. To illustrate the latter type of group, consider this example: Someone is commuting to their work. Simultaneously, there are other people that happen to be commuting with them. If something were to happen during this commute, for instance, a fire breaking out, all these people can become part of a type of group called an *emergent* group. This is an unformalized social group that has new social relations and new functions based on situational context (Drury, 2018; Stallings & Quarantelli, 1985). Some contexts in which this type of group may emerge is during emergencies or large-scale disasters (e.g., Paton & Irons, 2016; Twigg & Mosel, 2017; Voorhees, 2008). The contexts of these situations can cause a rise in feelings of a common fate between people and a rise in solidarity (Drury, 2018; Ntontis, 2021). These factors can attribute to the formation of an emergent shared social identity of this group (e.g., Drury, 2018; Drury & Winter, 2003; Ntontis et al., 2021). Much of the research that is done on shared social identity is primarily focused on shared social identities of already established groups, making the span of the literature concerning shared social identity in specifically emergent groups slim. Aiming to bridge this gap, the current study explored the relationship between shared social identity and emergent groups in emergency contexts.

Another factor that might be influenced by emergency context, is the level of emotions within the emergent group. Not only can emotions be influenced by situational contexts (Greenaway et al., 2018), they also play a significant role in group dynamics (e.g., Kleef & Côté, 2018; Smith & Mackie, 2015). Emotions and group membership have been theorized and shown to have a dynamic relationship with each other (van Kleef & Fischer, 2016). Being part of a group can affect an individual's emotions (Ray et al., 2008), and in turn, emotions

can affect how individuals in a group behave (Livingstone et al., 2011) and even how much they identify with the group (Yzerbyt et al., 2003). Grounded on these effects measured in the literature, it is clear that emotions and group membership seem to have a dynamic relationship. The corollary to this is that the effects of emotions cannot be left out of the conversation surrounding group membership and shared social identity, and should be considered when researching effects on the group-level. Since the current study aimed to explore group-level effects of emergency context, measures of levels of emotions were included. Research on the relationship between emotions and emergent groups is sparse, with most of emotion research focusing on already established groups, rather than emergent ones. To address this gap in research, the second aim of the current study was to explore the relationship between emotions and specifically emergent groups in emergency contexts.

Historically, most research on groups in emergencies or during disasters is conducted in a non-experimental way, through case-studies that were performed after such an event has taken place (e.g., Paton & Irons, 2016; Twigg & Mosel, 2017; Voorhees, 2008). Results from these case-studies are valuable, but cannot establish the independent effects that these emergency contexts have on emergent groups, since they have no reliable comparison group due to their non-experimental design. The current study employed an experimental design and is therefore an important addition to this research field, as it enabled the exploration of the independent effects of emergency context on emergent groups.

Additionally, a way in which the current study explored a new area of experimental emergent group research, is by focusing on an external observer's perspective, rather than a researcher's perspective or the perspective of the emergent group members themselves. Using observers to measure shared social identity effects and emotions in emergent groups allows for rating with less potential biases. In this way, biases such as researcher bias in the case of

researchers rating their observations, and retrospective biases in the case of emergent group members rating their own experience, were aimed to be avoided.

Altogether, through an experimental research design, the current research paper aimed to explore the relationship between emergency context and perceived shared social identity, as well as exploring the influence of emergency context on perceived emotions within a group.

### **Effects in Social Groups and Shared Social Identity: The Social Identity Approach**

The self-identification with a certain group, is discussed extensively in *Self-Categorization Theory* (SCT) (Billig & Tajfel, 1973; Turner et al., 1987) and *Social Identity Theory* (SIT) (Stets & Burke, 2000; Tajfel, 1978), both reviewed by Hornsey (2008).

Following SCT, people tend to self-categorize themselves into social groups. The SIT-approach states that group membership is tightly interwoven with identity, arguing that being a member of a social group creates a *shared social identity* within this group. Together, these two theories create the *Social Identity Approach* (SIA) (Reicher et al., 2010).

The connection between social groups and a shared social identity has been established in the literature (e.g., Hornsey, 2008; Neville et al., 2022; Postmes et al., 2005). People that feel as though they are part of a certain social group identify more strongly with the norms and characteristics associated with that group (Ray et al., 2008). There is evidence that supports that people's previously held norms can drift towards a group's average norm once they become a group member, like increased risk-taking (Alhajri et al., 2024) or engaging in conflicts (Reicher, 1996). Perceived group membership can also influence helping behaviors, such as the bystander effect and intervention (Levine et al., 2002). The SIA offers a theoretical explanation for these various effects of group-membership on individuals' feelings and behaviors: through self-categorization, a shared social identity is created, and individuals' feeling and behaviors can change accordingly.

## **Shared Social Identity in Emergent Groups in Emergency Context**

According to the SIA, in case of an emergency, a person might categorize themselves into an emergent social group with the people that are at this time in close proximity to them. With the emergence of this new social group comes a new social identity as well; an emergent shared social identity. In the literature, an emergent shared social identity has indeed been reported in emergent groups, following mass-emergencies and disasters (Drury, 2018; Drury & Winter, 2003; Ntontis et al., 2021). The effects that a shared social identity can have on an already established group is well-researched, but more extensive research has to be conducted in order to find out whether these effects only occur in previously established social groups, or in these emergent groups as well. To measure the extent of these effects, experimental research on shared social identity effects and emergent groups has to be conducted: to truly establish shared social identity effects in emergency contexts, a non-emergency control-group should be available for comparisons. This need for experimental research on top of the literature available on case-studies, underlines the value of the experimental design of the current study.

### ***Operationalizing Shared Social Identity Through Common Fate and Solidarity***

Shared social identity in emergency context is a theoretical concept, and can therefore be operationalized in different ways. Drury (2012) has put forward the *Social Identity (SI) model of collective resilience*, wherein the variable of *common fate* is an antecedent to shared social identity, and *solidarity* is a consequence. Common fate emerges in relation to the emergency itself: people feel as though they share the same fate as others in the emergency situation and this creates a sense of ‘togetherness’. Solidarity is a variable that describes the feeling of ‘groupiness’, and consists of three components: identification, entitativity, and belonging (van Mourik Broekman et al., 2018). In the SI model of collective resilience, the common fate of the group creates or strengthens their shared social identity by causing a

transformation of the relational bonds between group members. As Drury (2012) describes, these relational bonds transform from ‘me in contrast to others’, to ‘us in contrast to the emergency’. This change in self-categorization heightens feelings of solidarity between members. The current study adheres to this model to operationalize the concept of shared social identity in an emergent group, through common fate and solidarity, and uses this model to predict higher levels of shared social identity in groups in emergency context, compared to non-emergency context.

### **The Role of Emotions in Groups With a Shared Social Identity**

The role of emotions in groups is a dynamic role, as both emotions and group membership can influence each other (Smith & Mackie, 2015). Group members’ emotional experiences can change according to the emotions that they think belong to the social identity of the group (Doosje et al., 1998; Ilies et al., 2007) or that they observe other group members experiencing (Schury et al., 2020; Yzerbyt et al., 2003). Gao et al. (2016) asked people to report their emotional responses to an event and afterwards assigned them to a social group. They then received bogus feedback about the emotional response that others in this social group commonly had to this event. After this, they were asked to report their emotional response again. The results showed that people’s emotions had changed and drifted towards the direction of the emotions that were described in the bogus feedback, therefore adopting the emotions that they thought were normative to their group. Results from these studies show that perceived social identity can influence a person’s emotional experience. This further highlights the importance of inclusion of emotion variables in research concerning social identity. It also strengthens the choice of the current study to use observers to rate these variables, as these results point to retrospective bias in emotion ratings by group members themselves.

Results from a study by Yzerbyt et al. (2003) showed that emotions, such as anger, were experienced stronger by participants who had reported to feel a strong identification with an assigned group. When group membership of one group is made more salient to someone than their membership of another group, their emotional reactions to the same stimulus can change accordingly, even when they would normally identify with both groups. For instance, Ray et al. (2008) observed that people rated their anger towards Muslims (the outgroup) significantly stronger when they were categorized as Americans as opposed to being categorized as students. Since results of these studies show that emotions tend to inflate when they are tied to a shared social identity, through the SIA it can be theorized that members of the emergent group in the emergency condition of the current study, would experience higher levels of emotions compared to the non-emergency condition, due to their expected respective rise in shared social identity.

### **The Role of Emotions in Groups in Emergency Context**

Emotions are also associated with aiding social interaction and cohesion within groups (e.g., Cao et al., 2022; Lawler et al., 2000). There is evidence that emotions play an essential role in social helping (Bethell et al., 2014) and cooperation (Nguyen & Noussair, 2022; Yang et al., 2025). Lee et al. (2011) found evidence that interpersonal emotions showed a positive correlation with the willingness of group members to cooperate with each other. In addition to this, Avry et al. (2020) found that emotional sharing was related to significant increases in group members' intentions to cooperate when collectively solving a task. In relation to different situational contexts, tasks that need solving in an emergency context typically have higher stakes than tasks in non-emergency contexts. An example that relates to the current study would be of an emergent group that during an emergency situation (e.g. a fire alarm went off) is tasked to find a safe exit. In non-emergencies, the same task of finding an exit has relatively lower stakes: the situation is assumed to be safe, regardless of completing the task.

Compared to the non-emergency situation, a natural assumption would be that in the emergency situation, the groups' intentions to solve this high-stakes task would strengthen in order to reach this more pressing collective goal. If in order to reach this goal, cooperation between group members is needed, intentions to cooperate would rise in this group. In accordance with the literature, a group's willingness and intentions to cooperate is positively related with higher levels of emotion. Therefore, it could be theorized that an emergent group with a collective goal to complete a high-stakes task (emergency context), would show higher levels of emotions than groups that have a less pressing collective goal to complete a lower-stakes task (non-emergency context). This would result from their respective increased willingness and intent to cooperate. Note that, theoretically, observed (successful) cooperation levels would not necessarily increase in these groups, but intentions to cooperate and levels of emotions would.

### ***Expression of Emotions and Perceived Emotions***

Emotions are not only a private experience, but can also be expressed and consequently perceived by others (Lazarus, 1991). Trentacosta & Fine (2010) argue that emotions are fundamentally intertwined with skills needed for social communication. Expression of emotions can be done through facial expressions, body language, and social sharing or vocalizations (Izard, 2001). There is evidence that body language is the strongest transmitter of emotional states, compared to facial expressions (Abramson et al., 2021). Because of privacy reasons, the current study used videos in which peoples' faces were blurred. Based on results from studies such as the study by Abramson et al., this was not deemed to compromise the validity of the observed emotion ratings, as there is evidence that supports that people's body language is a stronger transmitter of emotional states than facial expressions.

The positive association between cooperation and communication among members has been established in the literature (e.g., Hallers-Haalboom et al., 2025; Qin et al., 2024). To relate this to the current study: in an emergent group that aims to cooperate, it could be expected that more communication between members would take place. And since the expression of emotions can be a powerful communication tool, it could also be expected that higher levels of emotions would be expressed by members. Lange et al. (2022) gathered evidence that supports that observers can accurately perceive emotions when they understand the context of the emotion expressions of others. In the current study, it is therefore assumed that observers who are shown group members' body language and their context, can accurately perceive and rate the levels of emotions of these group members.

### **Overview of the Current Study**

The aim of the current study was to explore the relationship between emergency context and shared social identity in an emergent group. This study also aimed to explore the relationship between emergency context and levels of perceived emotions in an emergent group. To do this, a between-subjects experiment was carried out, in which external observers (i.e. participants that are not part of the emergent group) were shown a video of a group that had to complete a task, in either of two conditions: an emergency context or a non-emergency context. Through the filling in of a survey after watching, the participants' perceived common fate, solidarity and emotions of the group members was assessed. The following was hypothesized:

1. External observers rate the strength of common fate and solidarity within a group higher when the group exists in an emergency context, compared to a non-emergency context.
2. External observers rate the level of perceived emotions within a group higher when the group exists in an emergency context, compared to a non-emergency context.

## Method

### Participants

A total of 77 participants from the first year of the English and Dutch tracks of the Bachelor Psychology at the University of Groningen took part in the current study. Following data screening and application of exclusion criteria, eight participants were removed as the 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 program (SONA), which compensated them with course credit. A post-hoc sensitivity analysis using G\*Power was carried out, testing the effect of the experimental condition on Common Fate and Solidarity (Hypothesis 1). This detected a medium effect size ( $d = 0.60$ ) with a power of 80% ( $\alpha = .05$ ).

### Research Design and Procedure

The current study gathered data through an experiment with a between-subjects design with two conditions: an emergency and a non-emergency condition. Ethical approval for this online study was obtained from the Ethical Committee of the Faculty of Behavioral and Social Sciences at the University of Groningen (PSY-2526-S-0043). The questionnaire was made using, and published on, the online platform Qualtrics (Qualtrics, Provo, UT). Through the online platform of SONA participants were recruited and directed to this questionnaire through a link. Prior to the start of the online study, participants had to read the study's information page, and had to give informed consent to allow usage of their data. In this information section, the participants were notified what the two conditions of the study were, however, they were not notified to which condition they would be assigned. 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 the two conditions. They could either be assigned to the emergency condition or to the non-emergency condition. After this, they were instructed to observe the behavior of the individuals the video that followed, depicting them in either an emergency or a non-emergency situation. The video needed to be displayed in full-screen mode on the participants' device and was permitted to be replayed as many times as needed. After the participants finished watching the video, they were asked to fill in an attention check. If they passed the check, the questionnaire continued with the following scales: Common Fate, Solidarity, Cooperation and Emotion (see Appendix A). The current study only focused on the Common Fate, Solidarity and Emotion scales. Once the questionnaire was completed, the participants were debriefed and thanked for their participation. Altogether, the questionnaire took about 25 minutes to complete, and the participants were rewarded with 0.4 SONA credits.

## **Measures**

### ***Experimental Manipulation***

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, in which they were filling in a mock survey, and then moving towards an exit. The videos differed in their situational framing based on the condition they were meant to measure. In two of the four videos, the situation was framed as an emergency situation. In this emergency condition, the individuals heard a fire alarm and a voiceover telling them that they had to evacuate and move towards 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. In this non-emergency condition, 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. Videos in both conditions had the same obstacle in front of the exit. The binary variable Condition was used to divide participants into the two groups, the non-emergency condition being coded as a score of 0 and the emergency condition being coded as a score of 1.

### ***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 six options: fire alarm, announcement, tire screeching, birds chirping, children playing, and not hearing any sound. Participants who failed the attention check because they indicated that they did not hear any sound at all, were excluded from further participation. Participants who failed the attention check because their answers did not match the sounds of video they were supposed to describe, were removed from the data.

### ***Scales***

All scales were measured on a 7-point Likert scale, ranging from -3 (*strongly disagree*) to 3 (*strongly agree*).

**Common Fate.** The Common Fate scale consisted of four items; an example item is “They were all in it together” (Drury et al., 2016). One negatively worded item was reverse-coded (item 4). Item wording was modified from Willemsen et al. (2025) ( $\alpha = .84$ ), whose respondents focused on their own experience in the experiment, to instead reflect an observer's perspective. The Common Fate score was an aggregated score from the scores on the four individual items.

**Solidarity.** The Solidarity scale consisted of three subsections: Belonging, Identification, and Entitativity (Van Mourik Broekman et al., 2018). Item wording was modified from Willemsen et al. (2025) ( $\alpha = .95$ ), whose respondents focused on their own

experience in the experiment, to instead reflect an observer's perspective. Solidarity was measured via an aggregated score of the variables Belonging, Identification and Entitativity. The Belonging section contained five items; an example item is “They were united” (Van Beest & Williams, 2006;  $\alpha = .77$ ). Two negatively worded items were reverse-coded (items 3 and 5). The Identification section contained five items; an example item is “They identified with each other” (Leach et al., 2008;  $\alpha = .88$ ). The Entitativity section contained four items; an example item is “They were a unit” (Jans et al., 2011; ( $\alpha = .95$ ).

**Emotion.** Participants were instructed to think about the emotions displayed by the people in the video and then answer the prompt: “In my opinion, the people in the video felt...” for 15 emotions. Based on Willemsen et al. (2025) ( $\alpha = .82$ ), the 15 items of the Emotion scale were separated into three clusters of emotions: Anxious Emotion, Enthusiastic Emotion, and Uncertain Emotion. The Anxious Emotion cluster contained six items; an example item is “alarmed”. The Enthusiastic Emotion cluster also contained six items; an example item is “energised”. The Uncertain Emotion cluster contained three items; an example item is “confused”. All Emotion cluster variable scores were aggregated scores from the individual items within the respective cluster.

## **Analyses**

To test the hypotheses of the current study, five simple linear regression (SLR) analyses were conducted. For testing Hypothesis 1, two SLRs were conducted with the Condition variable (emergency vs. non-emergency) as the predictor. The dependent variables were Common Fate and Solidarity respectively. For testing Hypothesis 2, three SLRs were conducted with the Condition variable (emergency vs. non-emergency) as the predictor. The dependent variables were the three different emotion clusters (Anxious Emotion, Enthusiastic Emotion, Uncertain Emotion). All analyses were run through JASP version 0.95.4.

## Results

The descriptive statistics table is presented in Table B1 in Appendix B.

### Assumption Checks

For each SLR, the assumptions of normality and homoscedasticity of error distribution were checked. The normality assumption was checked through Shapiro-Wilk tests on the residuals of each SLR (see Appendix B, Table B2). This assumption check was passed by the residuals of Enthusiastic Emotion in the SLR with Condition, and failed by all other SLR residuals. Following the Central Limit Theorem (CLT), the sample size of 69 was large enough ( $N \geq 30$ ) to use tests that assume normal distribution. The homoscedasticity assumption was checked through Levene's tests on the residuals of each SLR (see Appendix B, Table B3). This assumption check was passed by all SLR residuals.

### The Effect of Condition on Common Fate and Solidarity

Participants in the emergency condition did not rate Common Fate significantly higher than participants in the non-emergency condition,  $B = 0.25$ ,  $SE = 0.37$ ,  $t(67) = 0.69$ ,  $p = .495$ ,  $CI_{95\%} [-0.48, 0.99]$ . Participants in the emergency condition also did not rate Solidarity significantly higher than participants in the non-emergency condition,  $B = 0.25$ ,  $SE = 0.33$ ,  $t(67) = 0.78$ ,  $p = .438$ ,  $CI_{95\%} [-0.40, 0.91]$ . Since none of these results were significant, no evidence in support of Hypothesis 1 was found.

### The Effect of Condition on Emotion

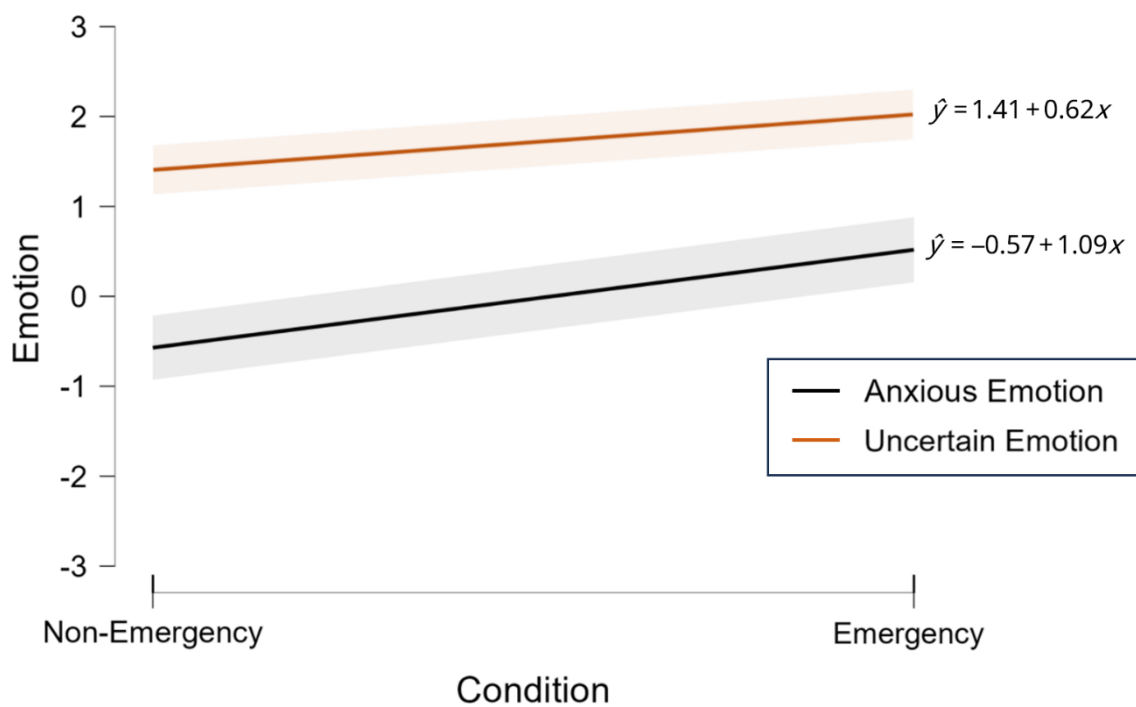
Participants in the emergency condition rated Anxious Emotion significantly higher ( $M = 0.5$ ,  $SD = 1.2$ ) than participants in the non-emergency condition ( $M = -0.6$ ,  $SD = 1.0$ ),  $B = 1.09$ ,  $SE = 0.25$ ,  $t(67) = 4.30$ ,  $p < .001$ ,  $CI_{95\%} [0.58, 1.60]$ . Participants in the emergency condition did not rate Enthusiastic Emotion significantly higher than participants in the non-emergency condition,  $B = 0.25$ ,  $SE = 0.21$ ,  $t(67) = 1.20$ ,  $p = .234$ ,  $CI_{95\%} [-0.16, 0.66]$ .

Participants in the emergency condition rated Uncertain Emotion significantly higher ( $M =$

2.0,  $SD = 0.7$ ) than participants in the non-emergency condition ( $M = 1.4$ ,  $SD = 0.9$ ),  $B = 0.62$ ,  $SE = 0.19$ ,  $t(67) = 3.20$ ,  $p = .002$ ,  $CI_{95\%} [0.23, 1.01]$ . Though not all significant, these findings are in line with Hypothesis 2. Figure 1 shows the significant marginal effects of Condition on Anxious Emotion and Uncertain Emotion.

**Figure 1**

*Marginal Effects Plot with Confidence Intervals of Condition on Anxious Emotion and Uncertain Emotion*



*Note.* The Condition variable is binary in nature, no values in between the two tick marks (Non-Emergency and Emergency) were measured,  $x$  only assumes values of 0 and 1. This plot is purely a visual representation to show the positive effect of Emergency condition on Anxious and Uncertain Emotion, compared to Non-Emergency condition.

## Discussion

Through a between-subjects experiment, the current study gathered data on observed common fate, solidarity and emotions in emergent groups in either emergency or non-emergency contexts. The theoretical concept of a shared social identity was operationalized with the Common Fate and Solidarity variables. Based on the literature on emergent groups and shared social identity (see Drury & Winter, 2003; Ntontis et al., 2021), and more specifically the SI model of collective resilience (Drury, 2012), it was hypothesized that people would observe higher levels of common fate and solidarity in emergent groups in emergency context. According to literature on emotions in groups with a shared social identity, levels of emotions are higher in groups with a stronger shared social identity (e.g., Gao et al., 2016; Smith & Mackie, 2015; Yzerbyt et al., 2003). The literature also shows evidence in support of the rising of emotional expression levels in groups with a collective goal, due to increased aims at cooperation and subsequent communication (e.g., Avry et al., 2020; Hallers-Haalboom et al., 2025; Lee et al., 2011; Qin et al., 2024). Based on these two lines of thought, it was also hypothesized that people would observe higher levels of emotion within the emergent group that had a collective goal, in the emergency context, compared to the group in the non-emergency context.

Results from the statistical analyses showed no evidence in support of Hypothesis 1: observers did not rate common fate and solidarity significantly higher in the emergency context, compared to the non-emergency context. External observers rated anxious and uncertain emotions higher for groups that were in emergency contexts, compared to groups that were in non-emergency contexts. These results provided partial evidence for Hypothesis 2, since results concerning enthusiastic emotion were not significant.

## Limitations and Future Directions

The main limitations of the study are its small sample size and the time constraint, both resulting from the purpose of this paper as a student thesis paper. Because of this, effect sizes are of medium strength and smaller effects could not be measured reliably. Future research could give more insight into smaller effects between the variables of interest by increasing the sample sizes. The current study is also limited in that the used questionnaire was distributed to participants via an online platform. This means that the environments of participants were different depending on their individual locations and no supervision of the participants could be exercised during their filling in of the survey. As a result of this, some of the experimental advantage might have been compromised, due to unseen components of the environment of participants that might have influenced the data. Future research could prevent this limitation by providing the questionnaire to the participants in person, in a controlled and supervised environment. Another limitation of the current study is its external validity. The emergency context condition video could not imply actual feelings of life-threatening danger, like a video of a real-world emergency would do, since this would not have been ethically appropriate towards participants. Therefore, the experimental manipulation might be lacking in external validity. Future research could instead use videos of actual emergencies to avoid this limitation, but it can be expected that this would be accompanied by difficulties of getting ethical approval for this research.

A strength of the current study is its experimental design, since experimental research in this field is quite young. Most of the literature available on emergent groups is still based on non-experimental research. This gives the current study the opportunity of breaching the scientific gap between research on relationships between emergent groups and more established experimentally researched concepts, like shared social identity and emotion. Furthermore, the current study is a follow-up study (see Willemsen et al., 2025), in itself giving insight into the robustness of the results of this previous study. An alternative

explanation of the results from the study from Willemsen et al. was that results could have been influenced by researcher bias in the rating of group variables. By using external observers to rate the group variables, the current study eliminates this researcher bias. Retrospective bias is also avoided by using observers to rate the variables, instead of using the ratings of emergent group members themselves. Another strength of the current study is its clustered variable to measure perceived emotion, based on the clustered variable from the study from Willemsen et al. (2025). This provided an opportunity for getting more insight into differences between emotion-related effects and the nature or polarity of the perceived emotions. Future research could focus on further exploring the role of polarity of emotions within the strength and direction of their associations with emergent groups in emergency contexts.

### **Theoretical and Practical Implications**

Following the SI model of collective resilience (Drury, 2012), it was theorized that emergency context would cause a rise in observations of a common fate between group members. This would have created a shared social identity of this emergent group, and as a result, solidarity would have been heightened. Instead, results showed that emergency context did not have a significant positive effect on common fate and solidarity, compared to non-emergency context. Ultimately, no evidence in support of the theory behind the proposed SI model of collective resilience is gathered through this research. Importantly, these results do not undermine the case-studies that report feelings of a common fate and solidarity in instances of emergencies and disasters (e.g., Drury, 2018; Ntontis, 2021). Through its experimental design with the inclusion of a control-group, the current study was able to find that these variables were not rated significantly lower in non-emergency situations. This could imply that the independent positive effect that emergency context has on common fate and

solidarity, in reality, might not be as strong as previously theorized based on case-studies of emergencies and disasters.

Even though some of the results of the study were non-significant, none of the results from the study point to contrary theoretical directions. For the theoretical implications of the study, this means that hypotheses for which no significant support was found (mainly Hypothesis 1) might still be directionally correct, but effects are smaller than expected and might not have been detected. This means that if future research is conducted with larger sample sizes, evidence in support of Drury's SI model of collective resilience could still be found.

Concerning the aspect of emotions in the study, the results did show that specifically anxious and uncertain emotions were observed in higher levels in emergent groups in emergency situations compared to non-emergency situations. Interestingly, enthusiastic emotions were not observed in significantly higher levels in the emergency context, compared to the non-emergency context. This difference in results between enthusiastic emotions and both anxious and uncertain emotions might have the following theoretical implication. It could be that the nature and polarity of emotions are important factors in determining the strength and direction of the relationship between perceived emotions and emergency contexts. Results imply that there could be a more prominent positive association between emotions of negative polarity (anxious and uncertain) and emergency context, than between emotions of positive polarity (enthusiastic) and emergency context.

The first line of thought that led to the prediction of a rise in emotions in the emergency condition, can be seen as an extension of the theory behind Hypothesis 1: the emergency context would increase feelings of a shared social identity, and groups with a stronger shared social identity display more emotions, the latter being well-established in the literature (see Gao et al., 2016; Smith & Mackie, 2015; Yzerbyt et al., 2003). Since no

evidence was found that showed a respective increase in shared social identity in the emergency condition, no evidence is found in support of this part of the theory behind the rise of emotions. When following the SIA on the emotion-effects of emergency context, a rise in emotions of specifically negative polarity would be in agreement with studies like Ray et al. (2008) and Yzerbyt et al. (2003), since these studies solely focused on a rise in levels of emotions with negative polarity (anger).

The second line of thought that led to hypothesizing that emotions would rise in the emergency condition, compared to the non-emergency condition, was the increased aim of group members to cooperate and communicate when they had a collective goal with high stakes. Since the levels of some of the emotions did rise in the emergency condition, the results of the current study do not provide evidence against this part of the theoretical approach. It is important to consider that analyses of measures of ‘aims at cooperation’ and ‘communication’ were beyond the scope of this current study, and no conclusions about the causal relationships between these variables and emotions can be drawn from the results. Notably, the most important conclusive finding that can be made based on the results of the current study, is that emergency context has a positive independent effect on anxious and uncertain emotions in emergent groups.

Concerning the practical implications of this study, the results are mostly relevant to social psychology and sociology researchers who are interested in the relationships between emergent groups in emergency context and shared social identity, as well as the role of emotions in these groups. Results call for the conducting of further research, with an increase of sample size being most important. In the larger practical picture, results from the current study might be used to inform the construction of plans of emergency management. The main take-away from the study regarding this practical aspect, is the importance of taking the influence of different situational contexts on group-level behaviors into account. Based on

findings from the current study, a focus of these emergency-management plans should be on the management of increased anxious and uncertain emotions among survivors of these emergencies.

### **Conclusions**

Compared to a control-group in a non-emergency context, emergent groups in an emergency context do not show large changes in observed shared social identity, when this is operationalized as common fate and solidarity levels. Higher levels of anxious and uncertain emotions are observed in emergent groups that are in an emergency context, compared to groups that are in a non-emergency context. It can be concluded that emergency context has observable group-level effects on emergent groups. The results of this study underline the need for further exploration through experimental research. Through this, a better understanding of the strength and directions of the effects that emergency context can have on emergent group-elements, such as shared social identity and perceived emotions, can be gained.

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## 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 Hindriks (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](mailto: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](mailto:privacy@rug.nl)

*As a research participant, you have the right to a copy of this research information.*

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2. Consent	<p><b>Informed consent for 'Perceived Group Cohesion during Emergency vs. Non-emergency Situations' (EC code: PSY-2526-S-0043)</b></p> <p>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. <i>You have a right to a copy of this consent form.</i> Consent to participate in the research:</p> <ul style="list-style-type: none"><li><input type="radio"/> Yes, I consent to participate. (1)</li><li><input type="radio"/> No, I do not consent to participate. (2)</li></ul> <p>Consent to processing my personal data:</p> <ul style="list-style-type: none"><li><input type="radio"/> 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)</li><li><input type="radio"/> No, I do not consent to the processing of my personal data. (2)</li></ul>
3. Demographics	<p>Please enter in your SONA identification number.</p> <p>What is your gender?</p> <ul style="list-style-type: none"><li><input type="radio"/> Female (1)</li><li><input type="radio"/> Male (2)</li><li><input type="radio"/> Non-binary (3)</li><li><input type="radio"/> Prefer to self-describe: (4)</li><li><input type="radio"/> Prefer not to say (5)</li></ul> <p>How old are you?</p>
4. Instructions	<p><b>READ THE FOLLOWING INFORMATION CAREFULLY</b></p> <ol style="list-style-type: none"><li>1. You need to have a stable, good internet connection.</li><li>2. Please make sure you have the <b>volume on</b> when watching the video.</li><li>3. Watch the video in <b>full screen mode</b> to avoid cutting off parts of the video.</li><li>4. Complete this survey in one go <b>without taking a break</b>. If you exit out the survey, you will not be able to come back in.</li></ol> <p>Thank you for your participation. You may now continue on to the study.</p>
5. Video	<p>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.</p>
6. Attention check	<p>Which sounds did you hear?</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Fire alarm (1)</li><li><input type="checkbox"/> Announcement (2)</li><li><input type="checkbox"/> Tire screeching (3)</li><li><input type="checkbox"/> Bird chirpings (4)</li><li><input type="checkbox"/> Children playing (5)</li><li><input type="checkbox"/> I did not hear any sound (6)</li></ul>
7. Attention check failed	<p>Unfortunately, this study requires you to have the volume on. As this was not possible for you, you cannot participate further in this study. <i>If you have questions regarding this, please contact Lisa Willemsen at <a href="mailto:l.j.willemsen@rug.nl">l.j.willemsen@rug.nl</a> for further information</i></p>

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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	○	○	○	○	○	○	○
They all shared the same fate	○	○	○	○	○	○	○
It was all of them against the situation	○	○	○	○	○	○	○
It was everyone for themselves	○	○	○	○	○	○	○

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





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	Disagree	Somewhat disagree	Neither disagree or agree	Somewhat agree	Agree	Strongly agree
	(-3)	(-2)	(-1)	(0)	(1)	(2)	(3)
energised	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
alarmed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
excited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
confused	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
startled	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
surprised	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
scared	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
anxious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
eager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
stressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
like this was fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
there was a sense of urgency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
enthusiastic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
uncertain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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 B

**Table B1**

*Descriptive Statistics*

	Common Fate		Solidarity		Anxious Emotion		Enthusiastic Emotion		Uncertain Emotion	
	Non-Emergency	Emergency	Non-Emergency	Emergency	Non-Emergency	Emergency	Non-Emergency	Emergency	Non-Emergency	Emergency
Mean	0.6	0.9	-0.2	0.1	-0.6	0.5	-1.1	-0.8	1.4	2.0
Std. Error of Mean	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1
95% CI Mean Lower	0.1	0.3	-0.6	-0.4	-0.9	0.1	-1.4	-1.1	1.1	1.8
95% CI Mean Upper	1.1	1.4	0.3	0.6	-0.2	0.9	-0.8	-0.5	1.7	2.3
Std. Deviation	1.4	1.6	1.3	1.4	1.0	1.2	0.8	0.9	0.9	0.7
95% CI Std. Dev. Lower	1.1	1.3	1.0	1.2	0.8	0.9	0.7	0.7	0.7	0.6
95% CI Std. Dev. Upper	1.9	2.2	1.7	1.9	1.3	1.4	1.1	1.2	1.2	0.9
Minimum	-2.8	-2.5	-2.4	-2.6	-2.6	-3.0	-2.8	-3.0	-1.3	0.3
Maximum	3.0	3.0	2.4	2.3	1.0	2.0	0.5	0.5	2.7	3.0

**Table B2***Shapiro-Wilk Test Statistics for Normality of Residuals*

Variable Residual	Shapiro-Wilk $W$	Degrees of Freedom	$p$ -value
Common Fate	0.95	69	.011*
Solidarity	0.96	69	.033*
Anxious Emotion	0.94	69	.004**
Enthusiastic Emotion	0.98	69	.389
Uncertain Emotion	0.64	69	< .001***

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$

**Table B3***Levene's Test Statistics for Normality of Residuals*

Variable Residuals	<i>F</i> -statistic	Degrees of Freedom		<i>p</i> -value
		df <sub>1</sub>	df <sub>2</sub>	
Common Fate	2.34	1	67	.131
Solidarity	0.87	1	67	.354
Anxious Emotion	0.00	1	67	.995
Enthusiastic Emotion	0.00	1	67	.953
Uncertain Emotion <sup>a</sup>	1.66	1	67	.202

<sup>a</sup> The test statistics for this variable were computed through RStudio, since JASP version 0.95.4 does not compute these statistics for variables with a Sum of Squares of zero.