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Sharing distress increases helping and contact intentions via social identification and inclusion of the other in the self: Children's prosocial behaviour after an earthquake

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Abstract

We surveyed young children (N = 517) affected by two major earthquakes to shed light on the role of identity processes in relation to the common observation that disasters can bring survivors closer together and enhance helping amongst them. As expected, posttraumatic stress symptoms caused by the earthquake were positively associated with intentions to have contact with and help other survivors of the earthquake, these effects being sequentially mediated by inclusion of the other in the self and by one-group representation. These findings extend previous research on both the antecedents and the behavioural effects of identity-fusion. The results are also the first quantitative test of a social identity account of collective resilience in children. We argue that these findings have practical as well as theoretical significance, as they demonstrate the adaptive function of group processes in informal responses to disasters.

Keywords

contact, disasters, helping, identity-fusion, resilience, social identity

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A common finding in the disasters literature is that survivors often display mutual social support and cooperation in the aftermath of such events, sometimes to an even greater extent than in ordinary life. This observation has been made in relation to disasters as diverse as hurricanes and floods (Rodriguez, Trainor, & Quarantelli, 2006), bombings (Drury, Cocking, & Reicher, 2009b), earthquakes (Oliver-Smith, 1999), and rail crashes (Cabinet Office, 2011). Similar to the effect of war in increasing community cohesion (Bellows & Miguel, 2009; Gilligan, Pasquale, & Samii, 2014), existing conflicts within a community are often reduced in disasters (Kaniasty, 2012). As work by

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Kaniasty and Norris has shown, the stress engendered by the disaster activates support networks—among survivors plus those outside the affected area—whose actions to some extent (and at least for a limited period) counteract the negative effects of this stress (Kaniasty, 2012; Norris & Kaniasty, 1996).

Accompanying these solidarity behaviours, those affected by disasters report a change in how they perceive or feel about their relationship with others in the affected group. Thus they often describe a stronger sense of "community" (Carrington, 2014), a feeling of "we-ness" with fellow survivors (Clarke, 2002), and a greater "closeness" or "togetherness" with other individuals caught up in the disaster (Jacob, Mawson, Payton, & Guignard, 2008; Mawson, 2007), a feeling denoted as "communitas" by anthropologists (Jencson, 2001).

Indeed, these phenomena seem to be connected. It is the shared suffering and distress of the disaster that appears to create an enhanced sense of community within which people are more likely to give each other social support (Kaniasty & Norris, 1999). These postdisaster transformed relations have variously been referred to as an "altruistic community" (Barton, 1969), "therapeutic community" (Fritz, 1961/1996), or even a "paradise in hell" (Solnit, 2009), since the common suffering entailed by the disaster itself creates a kind of mass democratization or even communism:

> Since the dangers in disasters come from outside the system and indiscriminately affect persons of all groups and statuses, there is a temporary breakdown in social class, ethnic group, and other hierarchical status distinctions, and a general democratization of the social structure. The reference changes from "only I have suffered" to "all of us have suffered; we are all in it together." This is the basis for the widespread feeling of community and equality of suffering found in disasters. (Fritz, 1961/1996, p. 58)

In social psychological terms, the changes in understandings of relations with others in the affected group are changes in self or identity, in which one becomes closer to these others, either fusing with other individuals such that the other becomes included in the self (IOS; Aron, Aron, & Smollan, 1992) or sharing a common social identity with them (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). While the concepts of identity-fusion and social identification are similar, and in measurement terms may be treated as tapping into similar things (Postmes, Haslam, & Jans, 2013), some suggest that there are important conceptual and empirical differences between them. Thus Gómez et al. (2011) argue that, in cases of identity-fusion, connectedness is more interpersonal, whereas social identification connectedness is based on category membership where members are seen as interchangeable. They suggest that highly "fused" people do not focus on the group as a relatively abstract social category, but instead see it more like a "family" consisting of members who each share a common bond. This perspective is consistent with the basic tenets of the common ingroup identity model (CIIM; Gaertner & Dovidio, 2000, 2012). The CIIM states that conditions which foster perceptions that ingroup and outgroup are included in a superordinate category change group representations from "us" and "them" to a superordinate "we," in turn improving intergroup relations. In fact, when individuals perceive themselves as members of a common group, former outgroup members are accorded the positive evaluations and behaviours generally reserved to the ingroup.

Conceptually, it might be argued that identity-fusion itself can imply some degree of social categorization in that one or more individuals are being grouped with self and distinguished from other individuals. And empirically, there is evidence that shared social identity and identity-fusion each have the same kinds of effects in increasing helping and other positive behaviours toward others in the group. This is the case both generally (Levine, Prosser, Evans, & Reicher, 2005; Swann et al., 2014) and in the case of disasters. Thus experimental simulations of an evacuation found that enhanced social identification increased willingness to stop to help fallen

strangers (Drury, Cocking, Reicher, Burton, et al. 2009); and survey evidence following the 2013 Boston Marathon bombing showed that identity-fusion increased support-giving to victims (Buhrmester, Fraser, Lanman, Whitehouse, & Swann, 2015).

While these existing studies are useful, they do not represent strong tests of the possible processes underlying the "altruistic community" behaviour described at the outset of this paper. First, the studies of identity-fusion do not test whether it can be enhanced by shared distress; and while they explain the behaviour of people outside the disaster wanting to give help (Buhrmester et al., 2015), they did not sample from survivors themselves. Second, the studies that showed the role of common fate in enhancing social identification and thereby increasing social support in disasters were either small-scale and mostly qualitative (Drury, Cocking, & Reicher, 2009a; Drury et al., 2009b) or relied on role-play (Drury, Cocking, Reicher, Burton, et al., 2009).

Therefore, a first aim of the present study is to examine for the first time whether the identity processes described before mediate the relationship between experiences of distress following the disaster and postdisaster social support. Hypotheses will be tested amongst a large sample of people who were actually affected by the events. A second aim of the study, and a second way that it is novel, concerns the nature of the sample. The processes described before, whereby a common distress changes self and relations with others have, as far as we are aware, only been tested on adults. One exception is Bokszczanin's (2012) longitudinal survey of adolescents who experienced a flood in Piechowice, Poland. This found that prosocial behaviour was common among young people; their engagement in providing others with social support predicted a greater sense of community and expectations of support. However, this study did not look at the predictors of giving social support, and no study to date, to our knowledge, has tested among young child survivors the chain from shared distress to the intentions to support other survivors (in addition providing evidence for the underlying psychological processes). Yet children are also affected by disasters, and indeed sometimes are particularly vulnerable.

In fact, children exposed to disasters very often show symptoms of psychological distress, emotional problems, and sometimes disorders, including posttraumatic stress disorder (PTSD; Gurwitch, Kees, & Becker, 2002; Kar & Bastia, 2006; La Greca, Silverman, Lai, & Jaccard, 2010). Posttraumatic stress symptoms include intrusive memories, avoidance, hyperarousal, and numbing, all factors that can severely impair individuals' and, especially, children's psychological functioning (Furr, Corner, Edmunds, & Kendall, 2010). As a consequence, in the aftermath of a natural disaster children may suffer severe cognitive consequences, such as lower academic achievement (Weems et al., 2013). Compared to adults, children could also be overly sensitive to contextual influences, such as dysfunctional reactions of their parents (Lambert, Holzer, & Hasbun, 2014), with the consequence of being less able to cope with the traumatic event (Furr et al., 2010). For instance, they may make a greater use of maladaptive coping strategies, which is likely to prevent an effective processing of the event and, as a result, a reduced ability to manage the stress (Cadamuro, Versari, Vezzali, & Trifiletti, in press).

Given the pervasiveness of detrimental consequences of natural disasters among children, it is especially important to examine the psychological processes helping them to face more effectively the traumatic event. Therefore, we examined responses postdisaster among a sample of children. Results may indicate for the first time not only whether distress can foster prosocial behaviour, but also the processes eventually driving this effect at a young age.

The Present Research

Before describing the specific hypotheses and design, we briefly describe the disaster experienced by our participants. Two large earthquakes struck the north Italian region of Emilia-Romagna in May 2012. In the province of Modena, the quake caused 27 deaths and damage to a number

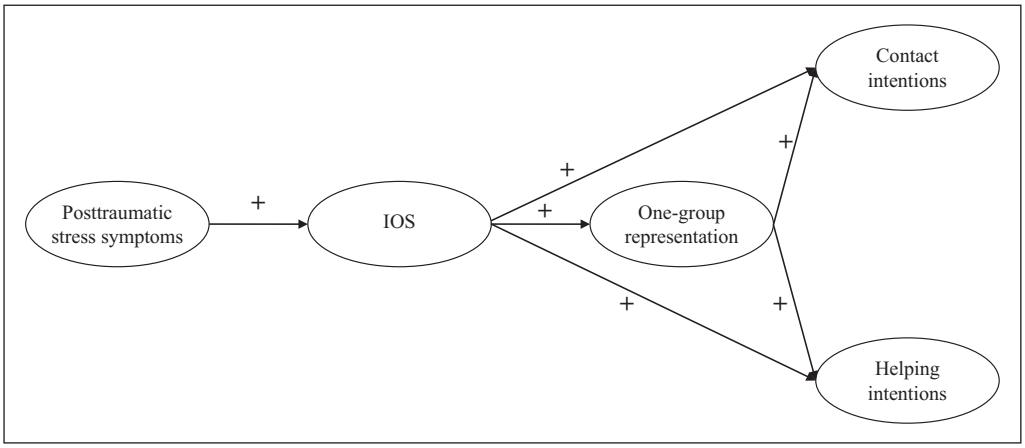

Figure 1. Hypothesized path model.
IOS = Inclusion of the other in the self.

of buildings. Aftershocks continued for several months, which caused distress to many people. Among schoolchildren between 6 and 10 years of age who were exposed to the earthquake, there was evidence of PTSD symptoms (Cadamuro & Versari, 2012).

Based on the literature and theory described before, we examined the following relationships among variables for a large sample of elementary school children in Modena. Specifically, we tested the four-level model presented in Figure 1. First, we took a measure of posttraumatic stress symptoms. While this measured individual distress in relation to the potentially traumatic event of the earthquake (such as bad memories and difficult emotions), since the items referred to the common context of the earthquake that each child knew that others had experienced, in line with the literature reviewed, we hypothesized that high scores here would be associated with stronger perceived closeness to other disaster survivors. Thus posttraumatic stress symptoms served as the independent variable (first-level) and IOS (Aron et al., 1992), which is our measure of psychological closeness (second-level), was tested as the first-level mediator. One-group representation (third-level) was entered as second-level mediator. According to the CIIM (Gaertner & Dovidio, 2000, 2012), perceiving others as closer to the self should favour their inclusion in a common ingroup; therefore we hypothesized that perceiving other child survivors as closer to the self should mediate the effect of posttraumatic stress symptoms on enhanced perceptions of being part of a common group.

The dependent variables were helping intentions and, since the "altruistic community" hypothesis would lead us to expect friendlier and more harmonious relations among those affected by the earthquake, contact intentions (fourth-level). Based on self-categorization theory (Turner et al., 1987) and more specifically on the CIIM (Gaertner & Dovidio, 2000, 2012), we expected that stronger one-group perceptions should be positively associated with intentions both to have contact with and to help other children affected by the earthquake. The rationale is that individuals both see others as self and accord a preference to ingroup members, hence they are more likely to want to meet and help people perceived as belonging to the ingroup (Nier et al., 2001; see also Haslam, Reicher, & Levine, 2012). As shown in Figure 1, we included direct paths from IOS to both contact and helping intentions, as there is evidence that identity-fusion increases helping (Swann et al., 2014) and we acknowledge that feeling closer to the other survivors may have a residual direct effect on the desire to meet and

help them without necessarily leading to feeling part of the same group. Finally, we tested five different alternative models using the same variables to give us confidence that our analysis was not only plausible but also persuasive.

Method

Participants and Procedure

The sample was composed of 517 children (254 males, 263 females), recruited from five primary schools in the province of Modena. Of these 517 participants, 395 were Italian and 122 were immigrant. Immigrant children were mostly from Asia (41.8%), followed by Africa (37.7%), Eastern Europe (19.7%), and Southern America (0.8%). The schools were selected by identifying areas heavily struck by the earthquake (between 5 and 12 km from the epicenter). The mean age was 9 years 6 months (age ranged from 7 years 7 months to 12 years 9 months). Participants were asked to complete questionnaires during classes approximately six months after the two powerful earthquakes of May 2012, but when tremors were just ended. The survey was presented as a research study on the consequences of the earthquake. Prior to conducting the study, we secured the consent of the children's parents, teachers, and school heads.

Measures

Posttraumatic stress symptoms. We assessed posttraumatic stress symptoms with the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979). This instrument has been used with both adult and child samples, including survivors of natural disasters (e.g., Green et al., 1994). The scale consists of 15 items assessing distress produced by a specific traumatic event (e.g., "I had bad dreams related to the event"). Respondents had to rate the frequency of symptoms in the past 7 days on a 4-point scale (0 = *not at all*; 1 = *rarely*; 2 = *sometimes*; 3 = *often*). Following Horowitz et al.'s (1979) instructions, for each item, scores were first transformed: participants responding "not at all" received a score of 0; participants responding "rarely" were assigned a score of 1; participants responding "sometimes" were attributed a score of 3; participants responding "often" were given a score of 5. Then we computed the sum of these items (α = .78). Possible scores range from 0 to 75: scores from 0 to 8 indicate that the event has not had a meaningful impact; scores from 9 to 25 indicate that the event may have had an impact; scores from 26 to 43 reflect a powerful impact of the event; scores from 44 to 75 indicate a severe impact of the event, which could potentially alter participants' cognitive functioning (Horowitz et al., 1979). High scores in this scale signal the presence of intrusion and avoidance symptoms which, although they represent possible indicators of PTSD, are not sufficient to make a diagnosis of PTSD according to current criteria of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-V) by American Psychiatric Association (2013).

Inclusion of the other in the self (IOS). Children were asked to indicate the psychological closeness to an unknown child attending to the same school as the participant and who like him/her was involved in the earthquake. One item was used, based on the scale by Aron et al. (1992). The scale consisted of four pairs of circles varying in their degree of overlap between the self as one circle and the other child as another circle. Children were asked to choose the pair of circles that best described their closeness to the other child. The choices varied from 1 (*no overlap*) to 4 (*highest degree of overlap*).

One-group representation. One-group representation was assessed with a single item (see Gaertner, Mann, Murrell, & Dovidio, 1989). Specifically, participants were asked to indicate their agreement with the following statement: "Children involved in the earthquake belong to the same group, the group of children." A 4-step scale was used, ranging from 1 (*absolutely not*) to 4 (*absolutely yes*).

Contact intentions. We used three items, adapted from Cameron and Rutland (2006), and from Vezzali, Capozza, Stathi, and Giovannini (2012). Children were asked, if they met at the park an

unknown child involved in the earthquake as they were, whether they would like to meet, play, and have an ice cream with him/her. A 4-step response scale was used (1 =*absolutely not*, 4 = *absolutely yes*). Items were combined in a single index of intentions to meet other child survivors (α = .75).

Helping intentions. We adapted three items from Vezzali, Stathi, et al. (in press), asking whether in the school context participants would help an unknown child involved in the earthquake as they are writing a text, doing mathematics, and finding a book s/he has lost. We used 4-step scale ranging from 1 (*absolutely not*) to 4 (*absolutely yes*). The three items were averaged in a single index of intentions to help child survivors (α = .68).[1]

We conducted a confirmatory factor analysis to test convergent and discriminant validity of the measures (LISREL 8.71; Jöreskog & Sörbom, 2004). A model with five latent variables was tested, corresponding to the measures presented before. In the analysis, IOS and one-group representation were measured by one indicator (corresponding to the item used for measuring each of the two constructs; error variance was fixed to zero); for the remaining constructs, we constructed parcels (three parcels for the measure of posttraumatic stress symptoms; two parcels each for contact and helping intentions) by following the procedure of item-to-construct balance suggested by Little, Cunningham, Shahar, and Widaman (2002). The goodness of fit of the model was assessed by using the chi-square test, the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA), and the comparative fit index (CFI). An acceptable fit to the data is indicated by a χ^2/df ratio of less than 3, an SRMR equal or less than .08, an RMSEA equal or less than .06, and a CFI equal or greater than .95 (Hu & Bentler, 1999).

The model fitted the data well: $\chi^2(19) = 33.23$, $p = .023$; $\chi^2/df = 1.75$; SRMR = .024; RMSEA = .038; CFI = 0.99 Factor loadings were satisfactory (all ⩾ .42, *p*s < .001), indicating convergent validity. With respect to discriminant validity, correlations between latent variables were either nonsignificant or different from 1, $p < .05$. Thus, the constructs examined were indeed distinct.

Results

Preliminary Analyses

Descriptive statistics and correlations among latent variables (tested in the confirmatory factor analysis described before) are presented in Table 1. As can be noted, posttraumatic stress symptoms were on average rather high, indicating that the earthquake had a powerful impact on children (see Horowitz et al., 1979). As indicated by one-sample *t*-test analyses, perceived closeness to other child survivors and perceptions to be one group were higher than the midpoint (2.5) of the scale, *t*s(516) > 9.07, *p*s < .001, suggesting that participants felt closer to the other survivors and generally perceived themselves as a single group with the other children. The fact that contact and helping intentions were also sensibly higher than the midpoint of the scale, *t*s(516) > 31.35, *p*s < .001, indicate that respondents were strongly inclined to meet and help other children in their same situation.

As can be noted in Table 1, posttraumatic stress symptoms were positively associated with all variables, except with one-group representation. IOS was positively associated with one-group representation and the two types of behavioural intentions. Finally, one-group representation was positively associated with both contact and helping intentions.

To test predictions, a path analysis with latent variables was conducted by using the indicators tested in the confirmatory factor analysis (LISREL 8.71; Jöreskog & Sörbom, 2004). We tested the four-level model presented in Figure 1. Moreover, the correlation between contact and helping intentions was allowed (see Table 1).

The model fitted the data well: $\chi^2(22) = 50.43$, $p = .00051$; $\chi^2/df = 2.29$; SRMR = .055; RMSEA = .049; CFI = 0.98. Results are presented in Figure 2. In line with expectations, posttraumatic stress symptoms were positively associated with IOS. In turn, IOS was positively associated both with one-group representation and with the two

Table 1. Descriptive statistics and correlations among latent variables (N = 517).

	1	2	3	4	5
1. Posttraumatic stress symptoms	–				
2. IOS	.17***	–			
3. One-group representation	.06	.24***	–		
4. Contact intentions	.17**	.43***	.23***	–	
5. Helping intentions	.28***	.32***	.14**	.56***	–
M	38.85	2.87	3.44	3.35	3.52
SD	13.98	0.93	0.74	0.62	0.51

Note. For all measures, the response scale ranges from 1 to 4, with the exception of posttraumatic stress symptoms (scale ranging from 0 to 75). IOS = inclusion of the other in the self.
*p < .05. **p < .01. ***p < .001.

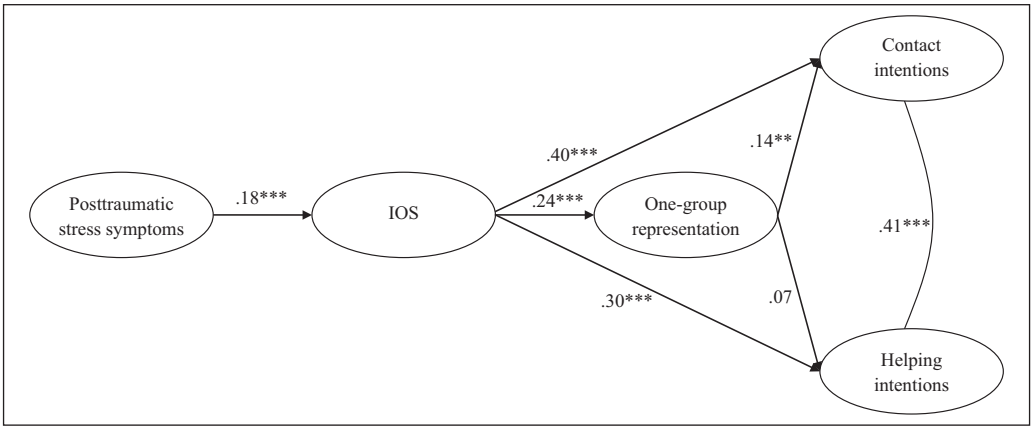

Figure 2. Path model with latent variables. IOS = inclusion of the other in the self.
*p < .05. **p < .01. ***p < .001.

types of behavioural intentions. Finally, one-group representation was positively associated with contact intentions. The positive relation between one-group representation and helping intentions, albeit in the predicted direction, did not reach conventional level of statistical significance (p = .156).

Indirect effects were tested using the bootstrapping method (Preacher & Hayes, 2008; for three-path indirect effects, see Taylor, MacKinnon, & Tein, 2008) with 2,000 bootstrap samples. An indirect effect is considered significant if the 95% bootstrap confidence interval does not include zero, p < .05. Results for indirect effects are shown in Table 2. As we predicted, higher levels of posttraumatic stress symptoms were indirectly associated with one-group representation, via IOS, and with the two types of behavioural intentions, via IOS and one-group representation. Moreover, IOS affected behavioural intentions both directly and (in the case of contact intentions) indirectly via stronger one-group perceptions.[2]

Alternative Models

We tested five alternative models. In the first, we examined whether intentions to have contact with and help child survivors (first-level) would predict perceptions of belonging to the same

Table 2. Indirect effects ($N = 517$).

Italian sample ($N = 395$)				
Predictor	Indirect process	Criterion variable	Mean bootstrap estimate	BCa bootstrap CI (95%)
Posttraumatic stress symptoms	IOS	One-group representation	0.0075	[0.0033, 0.0146]
Posttraumatic stress symptoms	IOS	Contact intentions	0.0095	[0.0045, 0.0193]
Posttraumatic stress symptoms	IOS	Helping intentions	0.0054	[0.0024, 0.0113]
Posttraumatic stress symptoms	IOS – One-group representation	Contact intentions	0.0008	[0.0002, 0.0025]
Posttraumatic stress symptoms	IOS – One-group representation	Helping intentions	0.0003	[0.000008, 0.0014]
IOS	One-group representation	Contact intentions	0.0194	[0.0037, 0.0420]
IOS	One-group representation	Helping intentions	0.0080	[−0.0019, 0.0244]

Note. Mean bootstrap estimates are based on 2,000 bootstrap samples. IOS = inclusion of the other in the self.

group (second-level). In turn, one-group representation was examined as antecedent of psychological distance (IOS) to other survivors (third-level), in turn predicting posttraumatic stress levels (fourth-level). The model fitted the data poorly: $\chi^2(24) = 126.47$, $p \cong .00$; $\chi^2/df = 5.27$; SRMR = .10; RMSEA = .087; CFI = 0.93.

In the second alternative model, we included posttraumatic stress symptoms (first-level) as antecedent of the intentions to help other survivors (second-level). In turn, higher helping intentions were expected to increase one-group perceptions and IOS (third-level; correlation among the two variables was allowed), which in turn were tested as predictors of the intention to have contact with other survivors (fourth-level). The model did not fit the data well: $\chi^2(23) = 107.53$, $p \cong .00$; $\chi^2/df = 4.68$; SRMR = .081; RMSEA = .083; CFI = 0.94.

In the third alternative model, we hypothesized that perceived psychological distance (IOS) to other survivors (first-level) would predict intentions to meet and help them (second-level). In turn, contact and helping intentions were examined as predictors of the perception of belonging to the same group (third-level), in turn leading to posttraumatic stress symptoms (fourth-level). The fit of this model however was worse than that of our proposed model: $\chi^2(23) = 74.49$, $p \cong .00$; $\chi^2/df = 3.24$; SRMR = .079; RMSEA = .066; CFI = 0.96.

In the fourth alternative model, posttraumatic stress symptoms were used as the independent variable (first-level), in turn predicting contact and helping intentions (second-level), IOS (third-level), and one-group representation (fourth-level). This model however did not fit data well: $\chi^2(23) = 113.84$, $p \cong .00$; $\chi^2/df = 4.95$; SRMR = .087; RMSEA = .084; CFI = 0.94.

The fifth alternative model was similar to the fourth alternative model except that one-group representation was included as third-level variable, and IOS as fourth-level variable. The fit of this model was practically identical to that of our proposed model: $\chi^2(23) = 44.86$, $p = .0041$; $\chi^2/df = 1.95$; SRMR = .037; RMSEA = .043; CFI = 0.98. We will discuss the significance of this in the Discussion section.

Discussion

This field survey of children affected by two earthquakes found that the event had a powerful psychological impact on them, measured by

posttraumatic stress symptoms, some six months after the major quakes. It might be thought that such distress would affect prosocial behaviour negatively, yet our respondents also reported high levels of both helping and contact intentions. We predicted and found that it was the very strength of these stress symptoms, which we can reasonably assume the children perceived as shared, that indirectly was associated with the strength of both helping and contact intentions. The analysis was consistent with a process in which stress symptoms had positive effects on helping and contact intentions through increasing psychological closeness to other children similarly affected by the earthquake, in turn enhancing the perception of belonging to a common group. In the first place, there was a quite strong association between IOS—measuring identity-fusion—and both of these dependent variables. In the second place, there was an association between one-group representation and contact intentions. Against predictions, there was no association between one-group representation and helping intentions. This may be due to the specific helping intentions measure used. Typically, measures compare helping provided to ingroup and outgroup members. In our case, we did not assess intended helping toward children not involved in the earthquake. Possibly, future studies using a comparative measure of helping may be better equipped to identify an association between perceptions of being members of a single group and greater desire to help ingroup versus outgroup members.

These results accord with much psychological, sociological, and anthropological research showing the effects of disasters in creating a greater sense of community and an increase in solidarity behaviours (see Kaniasty & Norris, 1999; Oliver-Smith, 1999). What we have added to this literature is evidence of the underlying group process, by also using a new sample group especially vulnerable to the consequences of disasters (i.e., young children). Thus our results are in line with the suggestion derived from identity-fusion theory that high levels of self–other overlap lead to greater desires to help and be with these others in emergency situations (Buhrmester et al., 2015)—although the present results have also gone beyond existing work on identity-fusion by showing that these effects on motivations to help others apply to people actually affected by the disaster, not just outside witnesses, and also that identity-fusion may be increased by shared distress. The results are also in accord with the social identity account of collective resilience in emergencies and disasters, according to which mutual aid amongst survivors reflects a cognitive redrawing of the boundaries of self; in this account each survivor becomes concerned with the other's wellbeing because "they" are now "us" (Drury et al., 2009a, 2009b). Moreover, results are also consistent with the CIIM (Gaertner & Dovidio, 2000, 2012), showing that perceiving being included in a superordinate group is associated with more positive behavioural intentions toward members of the common ingroup. However, here for the first time a pattern of responses to emergencies only analyzed previously in small samples and with interviews has been demonstrated quantitatively and with a large sample. These results are also notable and novel due to the fact that our study was carried out on a sample of schoolchildren—the first time as far as we are aware that identity-fusion and social identity processes in disasters have been studied in this age group. It is important to note that the pattern observed here is the same one that would be expected in adults, suggesting perhaps that, at least from 7 years old, age may not moderate these adaptive processes (though see Endnote 2).

Our interpretation of these results is that it is the fact that distress is shared—the earthquake was known by the children to be a common experience—rather than simply distress itself that leads to greater psychological closeness and shared social identity with others and hence to helping and contact intentions. The arousal: cost reward model (Piliavin, Dovidio, Gaertner, & Clark, 1981) suggests that one of the reasons for helping in an emergency is to reduce the costs (e.g., guilt or shame for inaction) of not helping. Our model cannot rule out this complementary explanation to our findings. However, the Piliavin et al. model is intended for those situations where an able helper is faced with a less able victim,

rather than mass emergencies where both are "victims."

The present analysis also fits to some extent with recent studies of the effects of pain on creating a "social glue" (Bastian, Jetten, & Ferris, 2014), though unlike in Bastian, Jetten, Hornsey, and Leknes's (2014) study, the pathway in the present analysis was from distress to giving social support via closeness, not distress to closeness via giving social support (see the poor fit for alternative Model 2, in previous lines). While our behaviour with others can in principle tell us about our relationship with them, this was not what we found in the present case (see also the results for alternative Model 1). Thus we agree with the suggestion of Bastian, Jetten, Hornsey, et al. (2014) that shared distress makes salient other people who share in the same circumstances, operating like Campbell's (1958) common fate as a criterion for grouping other people with self (Turner, 1981).

This point, however, takes us to the limitations of this study and some remaining questions, the first of which is why stress symptoms were not correlated with one-group representation. One possible answer has to do with the measure. The one-group representation measure was a standard item for common ingroup identification (Gaertner et al., 1989), yet arguably it is more akin to a measure of ingroup homogeneity than strength of social identification in the form of ingroup solidarity, centrality, or self-stereotyping (see, e.g., Leach et al., 2008; Postmes et al., 2013). Indeed the measure we used refers to oneself only implicitly. However, our results show that distress can influence such a one-group representation indirectly, by increasing psychological closeness to other survivors. Possibly the same reason is the explanation for the weak association with contact intentions (relative to the relation of IOS with contact intentions) and the nonsignificant association with helping intentions.

An obvious limitation of the present design is that it is purely correlational and moreover relies entirely on self-report. The results from the fifth alternative model suggest that there may have been bidirectional effects (from behaviours to identification as well as vice versa) and a design like this cannot rule that out. An additional limitation is that means for one-group representation and for contact and helping intentions are rather high, thus leaving open the possibility of ceiling effects. However, we would argue that these points must be balanced against the fact that research on disasters is difficult to carry out: people involved in disasters die, are seriously injured, or may not want to talk about their experiences. Also, events like earthquakes are unpredictable and so it is not feasible to carry out prospective studies of people's reactions to such events. However, there are ways that the present design could be developed to extend the analysis provided here. One way of doing so would be to include control groups (whenever possible) or follow up participants in the coming months, since the effects of the earthquake—on both stress and positive outcomes—may change over time. This calls for the importance of using longitudinal designs when examining responses to natural disasters. A second way would be to take independent measures of the children's actual behaviours—not just intentions—for example through teachers' ratings via sociometry or similar measures.

A further limitation is that participants could already feel closer to the other children of their school (IOS) and perceive them as belonging to a common group before the earthquake. However, since we have no data preceding the earthquake, there is no way of addressing this potential confound, that is, the change in IOS and one-group representation following the earthquake. However, the fact that posttraumatic stress symptoms were correlated with these variables suggests that the experience of the earthquake had a relevant role in determining their increase.

Before concluding, we must proffer a note of caution to the encouraging conclusions that might be drawn from this study. While disasters may often foster closeness and solidarity amongst survivors, there are a number of limits to their "mass democratizing" effects, as Kaniasty and Norris (1999) and Oliver-Smith (1996) have described.

First, "altruistic communities" are typically only short-lived, as needs in the affected group eventually outstrip the available help offered. Second, not everyone participates in or benefits equally from these communities. And, relatedly, disasters may sometimes amplify existing social stratifications—of class, gender, age, and ethnic group. In particular, the poorest groups are often least protected when disaster strikes.

Our concluding point is to highlight not only the theoretical significance but also the practical importance of the present findings. In their review of the policy implications of disaster research, Dynes and Drabek (1994) argued that those affected by disasters, far from being victims of "mass panic" and other pathology, need to be understood as "resources" for their fellow survivors (p. 12). In the case of the earthquake in Modena studied here, social support from peers was a vital factor in helping children to recover from its distressing effects (Cadamuro, Versari, Vezzali, Giovannini, & Trifiletti, 2015). In many disasters, there may not be sufficient numbers of professional emergency responders to reach everyone in good time or sufficient professional social workers to support people's recovery afterwards. Therefore, practically, some form of informal collective resilience in the public is necessary. The basis for this resilience, we suggest, is the human capacity to share identity with others—including strangers—simply because they suffered the same tragedy as oneself. The present study has provided some evidence for this group-based resilience.

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Notes

1. The questionnaires also included additional questions, unrelated to the specific aims of the study presented here. Some of these additional measures were used in the studies by Cadamuro, Versari, Vezzali, Giovannini, and Trifiletti (2015) and by Vezzali, Cadamuro, Versari, Giovannini, and Trifiletti (in press).
2. Including age, sex, group (Italian vs. immigrant), and, in a separate analysis, school of belonging (coded using four dummy variables) as covariates in the path model (i.e., regressing all endogenous variables on these covariates) did not affect the expected relationships between variables (however, when controlling for age, sex, and group, the relationship between one-group representation and helping intentions became significant, $\beta = .11$, $p < .05$). We also tested whether group, age, or sex moderated some of the effects by using hierarchical regression. The only moderation effect was found for age, concerning the residual path from IOS to contact intentions: IOS increased contact intentions to a greater extent among older than among younger participants (in any case, the effect was highly significant also among the younger group).

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