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# “Same team, different colours”: Examining the association between shared identity and interoperability in multi-agency discussion-based exercises

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## Abstract

Previous research demonstrates the persistent challenges in multi-agency emergency response. Recently, the Social Identity Approach has been used to better understand these challenges through providing a psychological framework to analyse relations within- and between-responder groups. The current study expands on this through six discussion-based exercises with emergency responders. Multiple regression analysis revealed that greater self-reported shared identity during the exercise was associated with greater self-reported joint working during the exercise. Analysis of the discussion transcripts identified some areas where joint working was challenged, for example using single-service terminology. Analysis of focus group discussions suggested important factors that linked shared identity and multi-agency response, such as increased motivation to work with each other and increased trust and respect. This research advances our understanding of multi-agency working from a social identity perspective by providing quantitative and behavioural evidence of the association between shared identity and multi-agency working, with important implications for practice.

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## Practitioner points

- A sense of shared identity is associated with improved joint working through providing responders with motivation to work with each other, give them confidence in each other, and increase their trust and respect for each other which can help to improve joint working.
- Specific factors which have been shown to facilitate a sense of shared identity among responders include responders having shared goals with each other, having shared principles (and utilizing these principles) in their response, and having a shared understanding of each other's roles and responsibilities.
- There should be an emphasis in training and guidance for interoperability on psychological factors, specifically factors that help to develop, and make salient a sense of shared identity between responders.

**Keywords:** shared identity; groups; interoperability; inter-organizational collaboration; major incident management; multi-agency emergency response.

## Introduction

According to the public inquiry into the 2017 Manchester Arena attack, there were “significant failures” in relation to interoperability in the multi-agency emergency response (Saunders, 2022a, p45). For example, due to communication and decision-making challenges, Fire and Rescue Service (FRS) responders were not present on scene during the first two hours of the response. This suggests that a key challenge with interoperability on the night of the attack was that the emergency services worked as separate teams, rather than one team - thus, interoperability was not achieved. This highlights the need for interoperability challenges to be better understood to improve joint working in the future. Furthermore, responders from the Police and Ambulance Services “did not notice” that the FRS were not present in the response and that this is suggestive of a lack of realisation from the other services of the important contribution the FRS could make (Saunders, 2022b, p.134). Accordingly, the Social Identity Approach has been used as a key theoretical framework to guide this exploration (Davidson *et al.*, 2022a; 2022b), and one we use in the current study. We discuss interoperability in more detail below, before explaining the relevance of social identity processes to the challenge of interoperability and introduce the current study.

## Interoperability in the emergency services

Interoperability refers to the way in which emergency responders work together during a multi-agency response. It has been a focus of research in UK emergency response for several years since the identification of persistent challenges in multi-agency response (Pollock, 2013). Indeed, in a review of 32 major incidents that took place between 1986 and 2010, Pollock (2013) identified several challenges relating to interoperability, such as ineffective communication and poor organizational planning, that were present across several incidents, including the London 7/7 bombings (Hallet, 2011), and the Hillsborough Stadium disaster (Taylor, 1990).

In an attempt to combat the recurring interoperability challenges that emergency responders face, the Joint Emergency Services Interoperability Principles (JESIP) were introduced in 2012 providing a framework for joint working (see Table 1). Yet, despite the introduction of JESIP, challenges with interoperability continue to persist. The evidence provided in the Manchester Arena inquiry, along with other reports (e.g., Grenfell Tower fire: Moore-Bick, 2019), raises the question of how the emergency services can be better prepared to jointly respond to incidents. In addition, there has been a recent call for a better understanding of the social interactions that take place during multi-agency response to better manage interoperability and collaborations between the services (Wankhade and Patnaik, 2020; Van Scotter and Leonard, 2022). To address this, recent research has focussed on applying social psychological processes to better understand why interoperability challenges might persist, and importantly, what can be done to help prevent them re-occurring in the future - discussed in more detail below.

**Table 1.** The five JESIP principles for joint working, from JESIP (2021)

Principle	Definition
<b>Co-locate</b>	Co-locate with other responders as soon as practicably possible at a single, safe, and easily identified location.
<b>Communicate</b>	Communicate using language which is clear, and free from technical jargon and abbreviations.
<b>Co-ordinate</b>	Co-ordinate by agreeing the lead organization. Identify priorities, resources, capabilities and limitations for an effective response, including the timing of further meetings.
<b>Jointly understand risk</b>	Jointly understand risk by sharing information about the likelihood and potential impact of threats and hazards, to agree appropriate control measures.
<b>Shared situational awareness</b>	Establish shared situational awareness by using M/ETHANE (a structured mnemonic model for responders to collate and pass on information, including whether a major incident has been declared [M] and the exact location of an incident [E], and the Joint Decision Model (a model to help responders make decisions together in a response considering the need for immediate action to save lives and reduce harm, including gather information and intelligence, and identify options and contingencies).

## Social identity processes and interoperability

The Social Identity Approach (Tajfel and Turner, 1979; Turner *et al.*, 1987) is a key framework in social psychology that can help understand how people from different groups work together. It suggests that a shared identity (i.e., a shared sense of 'us-ness') within a group can underpin group behaviour. For example, a shared identity can provide group members with shared definitions of situations and common norms for behaving in those situations (Reicher, Spears and Haslam, 2010). Shared identity can also foster trust and respect among group members (Turner *et al.*, 1987; Haslam, Reicher and Levine, 2012). Consequently, these effects of shared identity can improve collective behaviour among those who perceive themselves to share a social identity (Drury, Cocking and Reicher, 2009; Haslam, Jetten and Waghorn, 2009), facilitating coordination and cooperation between group members (Haslam, Jetten and Waghorn, 2009; Haslam *et al.*, 2022).

An important consideration in the context of multi-agency response however is that people can have multiple social identities which can become salient in different contexts (Turner *et al.*, 1987; Milward and Haslam, 2013). For example, responders can identify as their sub-group as Police, Fire, or Ambulance; but importantly, they can also identify as their

superordinate group as emergency responders (see Figure 1). Based on this notion that people can have multiple social identities, we need to understand *how* and *when* responders might identify as their sub or superordinate group identity, and what impact this has on their ability to work together. Accordingly, the Social Identity Model of Organizational Change suggests that employees will identify with a newly emerging organization more successfully if they are able to maintain their pre-existing social identity (Mühlemann *et al.*, 2022). Thus, it could be argued that responders will identify with their superordinate group as emergency responders better if they are able to maintain their sub-group identities as Police, FRS, or Ambulance.

To explore whether shared identity between responders was present in multi-agency response groups, and whether it facilitated interoperability between responders, Davidson and colleagues conducted two interview studies with responders working on the COVID-19 response at the strategic and tactical level (Davidson *et al.*, 2022a), and at the operational level (Davidson *et al.*, 2022b). Both studies found evidence of shared identity among responders in the multi-agency response groups. Factors that were linked to the development, or increased salience, of shared identity between responders in both studies can be separated into two main processes: *context-driven salience* processes and *communication-driven strategic* processes.

First, in terms of context-driven salience processes, Davidson *et al.*, (2022a) found that the shared threat of COVID-19 helped bring responders together and gave them a common purpose in their joint response to COVID-19. Similarly, Davidson *et al.*, (2022b) found that responders sharing difficult experiences with each other helped bring them together as a group. Both examples show evidence of a sense of common fate between responders - “a coincidence of outcomes among two or more persons that arises because they have been subjected to the same external forces or decision rules” (Brewer, 2000, p118). Indeed, a sense of common fate has been shown to facilitate the development of a shared identity (Drury, 2018).

Second, in terms of communication-driven strategic processes, Davidson *et al.* (2022a) highlighted the importance of leaders in strategically reinforcing a sense of shared identity, for example through emphasising the shared goals of the response to the group to help maintain a common picture of the response. In addition, whilst Davidson *et al.* (2022b) found that sharing difficult experiences helped bring responders together in a contextually-driven process, they also found that being able to talk to each other about these difficult shared experiences and providing each other with emotional support helped highlight the similarities between their organizations, helping make their shared identity as blue-light responders salient.

Yet, despite evidence suggesting that shared identity can facilitate coordination and cooperation between group members, and that shared identity is able to be developed between responders from different services in a multi-agency response, incident inquiries continue to highlight the persistent challenges with interoperability in multi-agency response. This therefore raises the question of *why* these challenges continue to persist. Furthermore, whilst the two studies discussed above provide a valuable insight into multi-agency working from a social identity perspective, they were focussed on the multi-agency response to COVID-19 which presented unique challenges for emergency responders. For example, the longevity of the response to COVID-19 was not typical of an emergency, with responders at the operational level spending

several months co-located together, something unique to the COVID-19 response (Davidson *et al.*, 2022b). Because of this, the generalisability of the results to other types of emergencies is unclear. Thus, further research in a non-COVID setting is vital to allow for a more robust understanding of why challenges with interoperability occur and what we can do to prevent them re-occurring in the future. Furthermore, the qualitative nature of the previous two studies lacks both objective and behavioural evidence that shared identity was linked to improved joint working performance, limiting any conclusions that can be made. We aim to address these concerns in the present study through discussion-based exercises with emergency responders from the Police, FRS, and Ambulance Service.

Exercises play a central role in assessing existing capabilities in emergency response (Borrell and Eriksson, 2013). Whilst they can take various different forms, including table-top and live, in the present study we conducted discussion-based exercises as a progression from the exploratory interview-based research conducted previously. Accordingly, discussion-based exercises involve a 'talk-through' of a plan or scenario, but do not require chronological realism or real-time properties (Alexander, 2000; Cabinet Office, 2013; see Borrell and Eriksson, 2013, for discussion). To support the development of discussion-based exercises to facilitate effective learning, Borrell and Eriksson (2013) made three recommendations: (i) variation should be incorporated during the exercise; (ii) scenarios should provide this variation, and (iii) participants should be able to interact with each other during the exercise. We incorporated these three recommendations in the present study - discussed below.

## The present study

Based on the need for further research, the present study used discussion-based exercises to explore the relationship between responders' sense of shared identity and their ability to work together. To address the recommendations suggested by Borrell and Eriksson, variation was created in the study through two distinct exercise scenarios which generated differing response needs. Encouraging interaction, participants were asked to discuss with each other how they would respond to the scenarios. Further, to address limitations of previous research, exercise discussions were recorded and analysed to provide a behavioural interpretation of multi-agency working during the exercises. Additionally, to provide quantitative evidence of any potential links between shared identity and interoperability, participants filled out questionnaires relating to their level of shared identity and perceptions of joint working both before and after taking part in the exercises. Finally, participants took part in a focus group at the end of the exercise to discuss their reflections on the exercises.

Specifically, this research aimed to answer the following research questions:

- RQ1. Did participants experience a shared sense of identity with each other during the exercises?
- RQ2. Did participants follow the joint working principles?
- RQ3. Was participants' shared identity linked to perceptions of joint working?
- RQ4. If participants followed the principles for joint working, how did they do this?
- RQ5. If there was a sense of shared identity, how did it develop?
- RQ6. How was shared identity linked to improved joint working?

## Method

### Design

Participants took part in two discussion-based exercises in groups of 3-6. There were six groups in total. A within-subjects mixed-methods design was utilised whereby quantitative, behavioural, and qualitative data was collected. The within-subjects design had two factors (time and exercise) - time had three levels (baseline, post-exercise 1, and post-exercise 2); exercise had two levels (exercise 1 and exercise 2). Quantitative data was collected through questionnaires at each time point. Behavioural data was collected through analysis of exercise transcripts. Qualitative data was collected through post-exercise focus groups.

### Participants

Twenty-four operational (or ex-operational) commanders from Police (N=7), FRS (N=15), and Ambulance (N=2) Services from six regions across the UK took part in the study. Due to confidentiality restraints regions will not be named. Participants were recruited via email through pre-existing contacts with the research team. To ensure anonymity, participants were given a unique participant number (1-24; see Table 2).

Participants took part in the study in their regional groups. Due to availability and operational commitments, the number of participants, and the number of representatives from the different services, in each group was unequal. Participants' average number of years in service was 20 years (max = 30 years, min = 8 years). See Table 2 for full details of participant information.

**Table 2.** Participant information

Participant	Group	Organization	Job Title	Gender	Years in Service	Pre-existing relationships*	Multi-agency training**	Familiarity with JESIP
1	1	Police	Sergeant	Male	19	Yes	Every 6 months	Very familiar
2	1	Ambulance	Emergency Preparedness, Response and Resilience Manager	Male	30	Yes	Every 6 months	Extremely familiar
3	1	FRS	Station Manager	Female	22	Yes	Every 12 months	Moderately familiar
4	1	Police	Inspector	Male	29	Yes	Every couple of months	Extremely familiar
5	1	FRS	Station Manager	Male	20	Yes	Every 12 months	Very familiar
6	1	FRS	Station Manager	Male	25	Yes	Every 6 months	Extremely familiar
7	2	Police	Inspector	Male	24	No	Every 6 months	Extremely familiar
8	2	FRS	Station Commander	Male	20	Yes	Every 2 months	Extremely familiar
9	2	FRS	Station Commander	Male	16	Yes	Every 12 months	Very familiar
10	3	FRS	Station Manager	Male	30	Yes	Every 6 months	Extremely familiar
11	3	FRS	Watch Manager	Male	29	Yes	Every 6 months	Extremely familiar
12	3	Police	Chief Inspector	Male	15	Yes	Every quarter	Extremely familiar
13	3	FRS	Station Manager	Male	26	Yes	Every 6 months	Extremely familiar
14	4	FRS	Group Manager Protection Support	Male	29	Yes	Every 12 months	Very familiar
15	4	Ambulance	Ambulance Doctor	Male	8	No	Rarely	Very familiar
16	4	FRS	Station Manager	Male	19	Yes	Every 12 months	Extremely familiar
17	5	Police	Sergeant	Male	8	Yes	Rarely	Moderately familiar
18	5	FRS	Station Commander	Male	18	Yes	Every 6 months	Extremely familiar
19	5	FRS	Station Commander	Male	9	Yes	Every 12 months	Very familiar
20	6	FRS	Station Officer	Male	18	Yes	Monthly	Very familiar
21	6	Police	Inspector	Male	22	Yes	Every 6 months	Very familiar
22	6	FRS	Sub Officer	Male	11	Yes	Every 6 months	Moderately familiar
23	6	Police	Sergeant	Male	18	Yes	Every 6 months	Extremely familiar
24	6	FRS	Station Commander	Male	19	No	Every 12 months	Very familiar

\* Pre-existing relationships with other responders in the study group.

\*\* How often participants take part in multi-agency training event

## Materials

### *Exercises*

Two exercise scenarios were developed in consultation with a practitioner stakeholder advisory panel consisting of representatives from the Police, FRS, and Ambulance Services. The scenarios represented two distinct emergencies which were chosen to present different challenges to the emergency services. Exercise A consisted of a flood at a primary school. Exercise B consisted of a shooting at a restaurant - see Appendix 1 for the full scenarios.

Participants completed both exercises - the order participants completed them was counterbalanced across groups.

### *Pre-exercise questionnaire*

The pre-exercise questionnaire contained two items relating to participants' shared social identity: "I feel a bond with the other responders taking part in this exercise"; "I think that the other responders taking part in this exercise feel a bond with each other"). These items were adapted from Leach *et al.*, (2008)'s items for solidarity and in-group identification and showed good internal reliability in the current study ( $r_{sb} > .90$ ). See Appendix 2 for the full pre-exercise questionnaire.

### *Post-exercise questionnaire*

The post-exercise questionnaire contained the same scale as the pre-exercise questionnaire measuring participants' shared identity and showed good internal reliability at both post-exercise timepoints ( $r_{sb}$ 's  $> .90$ ). An additional scale related to participants' self-reported adherence to JESIP principles (e.g., "I communicated effectively with other responders taking part in this exercise") (5 items). These items were based on the JESIP Assurance Framework (2017) and showed good internal reliability ( $\alpha > .90$ ). See Appendix 3 for the full post-exercise questionnaires.

### *Demographic questionnaire*

This questionnaire included questions about participants' gender, number of years in service, job title, and familiarity with JESIP prior to taking part in the exercise. See Appendix 4 for the full demographic questionnaire.

### *Focus group topic guide*

The focus group topic guide contained questions covering the same themes to those on the post-exercise questionnaires - participants' shared identity (e.g., "did you feel a bond with the other responders taking part in this exercise?") and their perceived adherence to JESIP principles (e.g., "how closely do you feel you followed the JESIP guidelines?"). See Appendix 5 for the full focus group topic guide.

## Procedure

Ethical approval was obtained from UK Health Security Agency Research and Governance Group, approval number: R&D



477. Due to constraints on in-person meetings due to the COVID-19 pandemic, exercises took place virtually using Microsoft Teams. All groups, other than Group 3, logged in on individual computers. Group 3 were co-located in the same room so logged in on the same computer.

Participants were provided with a link to the online survey software, Qualtrics, where they were provided with the information sheet again. Participants were asked to read this before signing a consent form. After signing the consent form, participants completed the pre-exercise questionnaire.

Participants then completed Exercise 1 where they were provided with the initial information via the chat function on Microsoft Teams. Participants were asked to read the information and had 15 minutes to discuss how they would respond. Subsequent information was given to participants at approximately 12-minute intervals. Participants had one hour in total for each exercise. Following Exercise 1, participants completed the first post-exercise questionnaire. Participants then completed Exercise 2 following the same timelines as Exercise 1, before completing the second post-exercise questionnaire. Finally, participants took part in a 30-minute focus group.

Upon completion of the study, participants completed the demographic questionnaire. They were thanked for their involvement in the study and a certificate of participation was provided to participants by email.

## Analysis

### *Questionnaire data*

Questionnaire data was analysed using SPSS 28.0.1. A paired samples t-test was conducted to examine any significant differences between JESIP scores post-exercise 1 and post-exercise 2 to determine whether perceived JESIP performance changed over time. A one-way repeated measures ANOVA was conducted to examine any significant differences between identity scores at baseline, post-exercise 1, and post-exercise 2 to determine whether shared identity changed over time.

A multi-level null (no predictors) model was created to examine any clustering in the data (Heck, Thomas and Tabata, 2014). This model was created to determine whether a multi-level analysis was required (i.e., analysis at the group level), or whether a single-level analysis would suffice (i.e., analysis at the individual level). A one-way independent subjects ANOVA was also conducted to confirm whether there was any significant effect of the group on the outcome variable.

Two one-sample t-tests were conducted to examine whether participants experienced a sense of shared identity during the exercise (RQ1), and whether participants felt they effectively worked together during the exercise (RQ2).

To answer RQ3, a multiple linear regression was conducted to examine the relationship between the outcome variable: JESIP score, and three predictor variables: baseline identity; post-exercise identity; and baseline JESIP.

### *Discussion transcript data*

To examine whether participants followed the joint working principles (RQ4), exercise discussions were recorded and transcribed. Data was analysed using the framework approach - a type of thematic analysis which is often used in research which has implications for policy (Pope, Ziebland and Mays, 2000). A thematic framework was identified based on the joint working principles (JESIP, 2021): communicate; coordinate; co-locate; joint understanding of risk; and shared situational awareness. Relevant passages within the data were then coded into one or more of the themes. To reduce subjectivity and address the issue of rigour, the lead author provided each group a score of 1 (strongly disagree) to 7 (strongly agree) for each theme for how well they demonstrated adherence to the theme. Inter-related reliability was conducted on this assessment using an additional researcher. This researcher was external to the research team and experienced in JESIP. The additional researcher was provided with the transcripts to two study groups (four exercises in total), as well as names and definitions of themes, and instructions on how to complete the coding. Substantial agreement between the researchers was found ( $k = .67$ ,  $p < .001$ , Landis and Koch, 1977).

### *Focus group data*

To examine whether there was a sense of shared identity among the group and how it developed (RQ5) and how shared identity was linked to improved joint working (RQ6), focus groups were recorded and transcribed. Data was analysed using the framework approach. A thematic framework was identified based on the research questions, the relevant issues highlighted in previously published literature, and notes made during initial reading of the transcripts. Data was analysed in relation to RQ5 and RQ6, with different themes identified under each (RQ5: time together and shared goals; RQ6: understanding each other's role, shared frame of reference, common language, and confidence). Relevant passages within the data were then coded into one or more of the themes.

## Results

This section is structured around the six research questions. First, results from the questionnaire data are presented to answer RQs 1-3. Second, results from the discussion transcripts are presented to answer RQ4. Finally, results from the focus groups are presented to answer RQs 5 and 6.

### Questionnaire data

In this section, the outcome and predictor variables which will be used for the main analysis are presented first, followed by RQs 1-3.

#### *Outcome and predictor variables*

A paired-samples *t*-test showed there was no significant difference in the JESIP scores post-exercise 1 ( $M = 5.89$ ,  $SD = .97$ ) and post-exercise 2 ( $M = 6.08$ ,  $SD = .91$ ),  $t(23) = -1.73$ ,  $p = .10$ . This indicates that self-reported JESIP performance did not change from post-exercise 1 to post-exercise 2. Based on this, JESIP scores post-exercise 2 were used as the outcome variable; referred to as *JESIP score* from now on.

A one-way repeated measures ANOVA was conducted to explore differences in participants' shared identity at three time-points (baseline, post-exercise 1, and post-exercise 2). The results indicate that there was a significant effect of time on identity score,  $F(1.47, 33.81) = 11.07, p = .001$ . Post-hoc comparisons using Bonferroni adjusted alpha levels of .017 per test (.04/3) revealed that participants' identity scores were significantly higher post-exercise 1 ( $M = 5.88, SD = .91, p = .002$ ) and post-exercise 2 ( $M = 5.99, SD = .90, p = .007$ ) than they were at baseline ( $M = 5.19, SD = .91$ ). However, the difference in identity scores between post-scenario 1 and post-scenario 2 was not statistically significant ( $p = .999$ ). This indicates that participants' sense of shared identity increased after they took part in exercise 1 but did not increase again after they took part in exercise 2. Based on this, identity scores at baseline, and post-exercise 2 were used as predictor variables; referred to as *baseline identity* and *post-exercise identity* from now on. Pre-existing JESIP knowledge from the demographic questionnaire was also used as a predictor variable - referred to as *baseline JESIP* from now on.

*RQ1. Did participants experience a sense of shared identity with each other during the exercises?*

Results of a one-sample *t*-test showed that the average participants' post-exercise identity score was significantly higher ( $M = 5.90, SD = .90$ ) than the mid-point value on the Likert scale of 4,  $t(23) = 10.36, p < .001$ . This indicates that participants did experience a sense of shared identity during the exercise.

*RQ2. Did participants effectively work together?*

Results of a one-sample *t*-test showed that the average participants' JESIP score was significantly higher ( $M = 6.08, SD = .91$ ) than the mid-point value of 4 on the Likert scale,  $t(23) = 11.27, p < .001$ . This indicates that participants felt they did effectively work together during the exercise.

*RQ3. Was participants' sense of shared identity linked to improved joint working?*

A multi-level null (no predictors) model was created to determine whether there was any significant clustering within the data by group and thus whether a multi-level analysis was required. Results showed no significant clustering within the data by group (Wald  $Z = .78, p = .22$ ). A one-way independent samples ANOVA confirmed there was no significant effect of group on JESIP score,  $F(5, 18) = 1.84, p = .16$ . This indicates that the group participants were in did not significantly affect their JESIP score. Thus, the development of a multi-level model was not warranted, and a single-level analysis was carried out.

A multiple regression analysis using the enter method was conducted to examine whether JESIP score (outcome variable) could be predicted by participants' baseline identity, post-exercise identity, and baseline JESIP (predictor variables).

The model was significant,  $F(3, 30) = 6.43, p = .003$ , explaining 49.1% ( $R^2 = .49$ ) of the variance in JESIP score. Both post-exercise identity ( $B = .60, t = 3.48, p = .002$ ) and baseline JESIP ( $B = .34, t = 2.11, p = .047$ ) contributed significantly to the model. Baseline identity did not contribute significantly to the model ( $B = -.14, t = -.83, p = .42$ ). This shows an

association between post-exercise identity and baseline JESIP with JESP score. The model does not show an association between baseline identity and JESIP score. Thus, shared identity was associated with perceived effective joint working.

## Discussion transcript data

The results of the discussion transcripts are presented in relation to RQ4: how did participants follow the joint working principles? Themes are separated into the five principles for joint working: co-locate, communicate, co-ordinate, jointly understand risk, and shared situational awareness.

### *Co-locate*

All groups discussed co-locating with each other. However, the extent to which this was discussed varied across groups. Some groups acknowledged that they would co-locate at the beginning of the response (e.g., Group 4), whilst other groups discussed in more detail *why* they would co-locate. For example, in the flooding scenario, responders in Group 1 discussed the importance of co-locating in order to share information about what happened and try to understand the level of urgency of the rescue.

In the shooting scenario, Groups 1 and 2 discussed establishing a forward command point so that they had a pre-designated time that they would meet again later in the response:

I think at this point we would slowly be starting to get into our battle rhythm, and we'd be identifying you've got your world to look after, I've got my world to look after, we probably set an agreed, let's come down every 10 minutes, every 15 minutes [...] although we won't necessarily be living in each other's pockets, but we'd certainly have that let's meet up at appropriate points, so that communication thing would be would be switched on (Police, Group 2).

One concern expressed by FRS participants in Groups 5 and 6 in the shooting scenario was around whether they were attending a shared meeting place with the Police and Ambulance, or whether they were attending an FRS-designated meeting point. FRS participants recognised the importance of meeting with Police participants in person to ask them what had happened and to establish which areas they could safely work in.

### *Communicate*

Conversations between participants across all groups, and in both scenarios, focussed on what participants knew, what they didn't know, and what they needed to know. In addition to this, participants regularly requested information from each other, particularly in the scenario they were not leading on. For example, in the shooting scenario, FRS and Ambulance participants regularly asked Police for updates on where they could safely work.

In addition, five groups used M/ETHANE to share information about the incident. However, the level of detail in which this was discussed varied across groups. Some groups (1, 3, and 6) mentioned M/ETHANE once at the beginning of each scenario, whereas others (2 and 4) discussed providing an updated M/ETHANE message once new information was available.

During the shooting scenario, Group 5 were concerned about ensuring that the declaration of Operation Plat<sup>1</sup> was clearly communicated to all of the emergency services - this was a key consideration for the FRS participants in this group to enable them to respond effectively. Furthermore, in terms of clarity of communication, there was some confusion around certain terminology that was used, particularly in the shooting scenario which involved more technical language. For example, in Group 1 the Ambulance participant requested clarification of the Police participant's use of the word "clear" when describing the incident scene. Similarly, in Group 6 there was confusion around the phrase "Silver meeting<sup>2</sup>", with police and FRS participants each having a different understanding of what this meant:

FRS: you know, a quick and dirty silver meeting to erm just confirm those things [...]

Police: Whilst I'm really comfortable that silver meetings are really important and I think they are, erm sometimes [...] can be done outside of a silver meeting [...]

FRS: Yeah, I think probably different understanding of of a silver meeting there. I'm quite comfortable comfortable to have that like a quick discussion over the bonnet and decide those things.

### *Co-ordinate*

In order to facilitate co-ordination between participants from different organizations, all groups agreed who would take the lead in each scenario. All groups agreed that FRS would take the lead in the flooding scenario and Police would take the lead in the shooting scenario. In addition, most groups discussed and agreed on declaring a major incident, even if the scenario wasn't a major incident for their organization. For example, in the flooding scenario, the Police participant in Group 3 explained that although the scenario was not a major incident for them because it did not stretch their resources, they would declare a major incident because of the impact it would have on their partner services.

As well as clarifying information around the scenario and who would be in charge, the Ambulance participant in Group 1 explained the limitations of their organization, stating that they do not work with water and would therefore need to call in specialist back-up. In addition, FRS participants in Group 2 were proactive in asking for specific support from the Police in the flooding scenario. For example, FRS participants requested for a cordon to be set up to allow for the children to be safely evacuated. These specific requests allowed the actions between the organizations to be more joined up.

In the shooting scenario, discussions in all groups focussed around where they could safely work. FRS and Ambulance participants made it clear to Police that this information was essential for them to be able to work effectively:

That's the crux for me is setting those zones [...] we need the zones to ensure [...] we've got a safe system of work in place [...] this is the crux of the discussion over that bonnet (Ambulance, Group 1).

### *Jointly understand risk*

It was agreed across all groups and scenarios that whichever organization led the response, they were also in charge of the risk assessment. In the shooting scenario, FRS and Ambulance participants asked several questions to Police

participants about where they could safely work, what protective equipment they needed, and what the risks were. However, in the flooding scenario the risks seemed to be less clear with more confusion among participants around what they could do. For example, in Group 6 there was confusion among the Police participants about why three feet of water was a risk:

From a police officer that is not swift water trained or anything, when I read three foot I'm mindful of not understanding what the risks are [...] and I think a very brief conversation [...] so an understanding of that risk, that joint understanding of risk of why that is a major incident and why we can't just walk straight in [...] would be quite important to understand (Police, Group 6).

Three groups discussed moral pressures around the scenarios which could potentially impact the level of risk responders were willing to take. For example, in the shooting scenario one FRS participant in Group 6 said they had a “moral imperative” to save life and recognised that their initial crews on scene would not have sufficient body armour to protect against gunfire, so they needed reassurance from the Police in terms of where they could safely work. FRS participants in Group 4 expanded on this and said the moral pressure for them to respond would become exacerbated if members of the public put themselves at risk to try and help people. Yet, this moral pressure was also discussed by a Police participant in Group 3 who emphasised the importance of the shared understanding of risk between the services, despite any moral pressures to save life. Participants in Group 4 also discussed moral pressures involved in the flooding scenario because of the involvement of children and the need to make sure crews did not put themselves in danger during the rescue.

### *Shared situational awareness*

The focus point of several discussions across all groups and both scenarios was around information gathering as participants recognised that they needed to know more information about the nature of the scenario before they could make any operational decisions. In the shooting scenario, an FRS participant in Group 6 explained that until they knew more information about what had happened, they would not be committing crews to the scene:

Obviously from fire service point of view, we wouldn't be anywhere near it at this stage. We would stay at the RVP [...] I'd wanna try and make contact with the other erm emergency services leads that are there and that discuss what what plan is and find out more information (FRS, Group 6).

Four groups discussed what their priorities and objectives were in the response. For example, in the shooting scenario, Groups 1, 2, and 6 discussed that saving life was a priority. In the flooding scenario Group 4 discussed that their priorities were protecting property and preserving life. Participants in all groups discussed their role in achieving these goals. For example, during the flooding scenario, the Police participant in Group 5 said that they would be controlling cordons and door knocking in the places that may need evacuating. In addition, whilst all organizations stated what role they would play in the response, in scenarios where they were not the lead organization, participants said they would be relying on the lead organization to give them some direction in their response.

## Focus Groups

This section is presented in relation to RQ5: development of a shared identity (shared goals, shared principles), and RQ6: how shared identity and joint working are linked (motivation to work with each other, confidence, increased trust and respect). Themes are presented alongside relevant extracts from the interviews.

#### *RQ5: Development of a shared identity*

**Shared goals.** Across nearly all groups, participants commented that they were trying to achieve the same goal, regardless of their organization. Some participants specified what the goal was (e.g., “resolution of the incident”, Group 6; or “save life”, Group 4), whilst others more broadly stated they were “all here for the same thing” (Group 1) or their “goal is fundamentally the same” (Group 5). Some participants said that having this shared goal in the response helped to provide them with a shared purpose, for example:

Ultimately what I’m trying to do, well we’re all trying to deliver an operational response to an incident (Police, Group 3).

Expanding on why shared goals are important, one participant explained that even though participants from different organizations may have different ways of achieving a shared goal, just having a shared goal can help establish a bond between them (Group 6). Another participant explained that their shared goals highlighted the fact that participants from different organizations have a similar mindset, and this helped to create a connection between them, for example:

Same team, different colours, and I think the reality is [...] we can’t do anything alone. We have to do things together as a team, and as such we are pretty much all of a same mindset. Everyone joins their respective services to to to be that hero and to make that difference, we just do it in slightly different ways. But essentially erm if you stripped us of our of our colours, you probably won’t be able to tell the difference in the service [...] so yeah, straight away you’ve got that [...] shared sort of frame of reference to each other (Police, Group 2).

**Shared principles.** All groups discussed the joint operating principles laid out in JESIP provided them with a shared frame of reference to work towards which helped bring them together during the exercises. One participant said during one exercise they used the JESIP principles to help guide their discussions and decision making and this was “reassuring” because it highlighted that they were “all on the same page” (Ambulance, Group 1). Participants also explained that JESIP helped with their joint working during the exercises because the JESIP principles are “embedded” (Ambulance, Group 1; Police, Group 2) or “ingrained” (Police, Group 3) in them.

Participants discussed that following the shared principles allowed them to see the similarities between them, rather than their differences. One responder explained that recognising their similarities created a unity between them:

I think [recognising similarities] helps massively [...] ‘cause everyone can see everyone’s doing the best they can [...] we realise we’ve all got the same kind of stresses and strains in our jobs and that kind of unifies people almost into that blitz spirit where everyone is just doing the best they can and we find we can do better with each other than we can in isolation [...] out there or in here on this exercise (Police, Group 2).

When asked whether they felt a bond with each other, one participant replied that JESIP facilitated this by providing them



with the same procedures to work with:

The publication of the joint operating principles have assisted as well 'cause it allows the the different services to have procedures that sort of mirror each other's, so we're all singing off the same hymn sheet, so yeah, I think the answer to your question is absolutely (Police, Group 3).

JESIP also provided them with a common language which they all understood and could communicate with. One FRS participant in Group 4 said that "talking the same language" with the responders from other organizations was an important part of the relationship building between them early in the exercise. This participant provided an example from the exercise when one of the other participants in the group used an abbreviation and then confirmed that other participants in the group all knew what the abbreviation meant. This participant said this helped establish a "common playing field" between those taking part in the exercise which was important because they were there to "support each other and help out".

#### *RQ6. How shared identity and joint working are linked*

**Motivation to work with each other.** Over half of the groups discussed that establishing a bond between each other during the exercises was useful because it provided them with motivation to work with each other in the response and listen to each other's input. One participant in Group 2 said that the established bond between them made them want to work together in the response. Two groups recognised that even if they were working together for shared goals, there may have been differences in their organizations that made working together challenging, for example different appetites to risk (Group 2). However, they recognised that it was the relationships and the bonds built between participants that prevented those challenges having a negative impact on the response, for example:

There will always be a pull from each other's own services [...] it is the relationships that build around that will stop those conversations from happening 'cause everyone will kind of come to that eureka moment I guess (FRS, Group 2).

Some groups emphasised the need to ensure they were communicating clearly so that other participants would understand them. For example, in Group 5 one participant said because of the relationships that were built between them, they were actively thinking about participants from the other organizations and how to best communicate with them:

That's your point of view, well how can I put across my point of view and my understanding to you in your terms or something's that's gonna make a lot more sense for you (Police).

In addition, some groups also discussed wanting to seek information from the other organizations before they made a decision, especially on topics which may have been outside of their area of expertise. For example, Group 4 discussed "referring and deferring" to each other's expertise rather than making decisions alone and they were doing this because of the relationships they developed early on in the exercise.

**Confidence.** Several groups discussed how establishing a bond with each other helped to give responders confidence, both in other responders' ability, as well as in themselves. One participant in Group 2 explained getting to know others in



the group, and starting to develop a relationship helped them to start talking in more technical language with the confidence the other participants would understand:

I think that round robin that [name] initiated at the start there is no different than we'd do at any big fire or any big incident [...] cause you you would understand what the skill sets people bring to table when we start. It's no good me talking about in that first scenario, hot, warm cold zones, limited exploitations, if [name]'s a PCSO that's worked in a market town all his life and he's got no idea what I'm talking about. He's an inspector [...] he's gonna know what I'm talking about. I can [...] get to the point directly [...] gives you that confidence to start talking (FRS, Group 2).

In addition, having an established bond between participants also gave them confidence to challenge each other when they either did not understand, or did not agree with something. Participants in Group 1 discussed how during the shooting scenario, the Ambulance participant challenged a decision made by the Police who said they would not allow them to enter the scene. When asked why they challenged this, the Ambulance participant explained that the more they worked together, the more comfortable they got with challenging each other. Similarly, in Group 6 participants discussed how in the flooding scenario, one Police participant questioned the FRS's concern around the depth of the water as this was a risk they did not understand:

I felt comfortable [...] to challenge something that I didn't know. I think it was clear when we were talking about [...] the risk of three-foot water, police might not see that as a risk, they're quite happy to challenge the fire brigade to say why is that a risk? And we're happy to provide that feedback like, bonded learning or or just trust in each other's ability to make those calls (FRS, Group 6).

**Increased trust and respect.** Half of the groups discussed the importance of trusting each other during the response. Group 2 discussed that this trust was established early in the exercise when one participant initiated a round of introductions where participants stated who they were and what their role was.

This established trust through understanding each other's roles was particularly important among participants in some groups when the scenario in the exercise was outside of their specialism. For example, in Group 2, one FRS participant said they were "heavily relying" on the Police responder in this group to take the lead due to the scenario not being within their area of expertise. Yet, participants said communicating "often and clearly" with the other participants in the group enabled trust in the other responders to develop through recognising "everyone brings something to the table".

Participants said that trust was also a result of the bond created between participants through the shared principles participants used during the exercises. When explaining how JESIP facilitated their joint working during the exercise, one participant in Group 2 described the JESIP principles as a "golden thread" that ran through their discussions. Expanding on this, one participant in Group 4 explained that even though they had minimal insight into other organizations processes and procedures, JESIP provided a common element between them, which helped create "mutual recognition and respect" for each other during the exercise. This participant explained that this mutual recognition and respect for each other facilitated group working through making them want to get along with each other, rather than in the past where they might have seen themselves as individual organizations.

## Discussion

In the present study we examined the association between shared identity and interoperability through discussion-based exercises with six multi-agency groups. Specifically, we wanted to know whether participants experienced a shared sense of identity during the exercises, and if so how; whether participants followed the joint working principles, and if so, how; and whether shared identity was associated with joint working.

As expected, results from the self-report questionnaires showed that pre-existing JESIP knowledge was associated with greater self-reported joint working during the exercises. JESIP provides responders with guidance and principles on how to respond to a multi-agency incident (JESIP, 2021). Thus, it is not surprising that participants with greater knowledge of the JESIP principles before the study reported greater joint working performance during the exercises. However, it is well documented within emergency response literature and incident reviews that there are often challenges associated with joint working and that JESIP principles are not often effectively applied in real-life responses (e.g., Saunders, 2022a; Pollock, 2013).

Upon further exploration, whilst the questionnaire data showed participants did perceive themselves to effectively work together, analysis of the discussion-transcripts showed some challenges in joint working. Accordingly, these challenges seemed to arise when responders appeared to focus on their individual service, as opposed to seemingly working ‘as one’ in the response. For example, confusion arose in some groups when participants used organization-specific terminology that meant something different to participants from other organizations. As a result, certain terminology needed clarifying before participants were able to move forward in their discussion. This is an almost identical challenge to that faced by responders in the Manchester Arena Attack and the need for common terminology between the services, and a common understanding of those terms, was emphasised in the inquiry (Saunders, 2022b).

This finding that challenges arose when participants appeared to focus on their individual service highlights the psychological element involved with joint working, specifically the importance of understanding responders shared identity during a multi-agency response. This is in line with previous research looking at interoperability between the emergency services in the UK during the initial months of the COVID-19 pandemic. This research found challenges in joint working were present when responders’ individual service sub-group identities were salient, rather than their superordinate shared identity as emergency responders (Davidson *et al.*, 2022b). Furthermore, in a simulated terrorist incident in the UK, Brown, Power and Conchie (2021) found that the over involvement of a single team reduced the effectiveness of joint working through a loss of expertise in the response due the less-focal teams making fewer contributions in the response. This suggests that when responders see themselves in terms of their individual response organizations, rather than a joint team they do not actively seek the contribution of other response organizations, and conversely the other organizations do not offer their contribution.

Yet, despite this challenge of responders focussing on their individual service, the current study does provide evidence of an association between shared identity and joint working, with shared identity being associated with greater self-reported joint working during the exercises. When looking at the factors that facilitated the development of a shared identity during

the study, participants having shared goals as well as shared principles helped to create and make their shared identity as emergency responders salient. To this end, applying what we know from the social identity approach, responders shared goals and working principles in the current study is likely to have helped facilitate the development of a shared identity between responders through highlighting their similarities as emergency responders in terms of the aspects of the response they shared (e.g., their shared goal of saving life), rather than their differences (e.g., their sub-goals in the response). Accordingly, this increased perceived similarity between the group members is likely to help create or make salient their shared identity as emergency responders (Oakes, 1987; Haslam, 2004).

In terms of *how* shared identity was associated with joint working, shared identity in the current study helped to facilitate perceived joint working through providing responders with motivation to work with each other, confidence in both each other and themselves, and also increased trust and respect in each other. This is in line with a wide body of social identity literature that shows that a shared identity within a group is a basis for coordination and cooperation between group members. Accordingly, shared identity can increase groups members' psychological sense of interconnection and common purpose (Haslam, Jetten and Waghorn, 2009; Haslam *et al.*, 2022), provide a basis for developing shared understanding of situations, and thus common norms for behaving in those situations (Reicher, Spears and Haslam, 2010), as well as foster trust and respect among group members (Turner *et al.*, 1987; Haslam, Reicher and Levine, 2012).

Yet, whilst identity during the exercises was associated with greater self-reported JESIP performance during the exercises, baseline shared identity level was not. This has important implications for training and practice because it suggests that a sense of shared identity between responders can be developed during a response. Furthermore, if shared identity is developed during a response, this can help improve joint working between responders. Thus, this highlights the need for training and guidance to recognize the psychological factors associated with joint working.

## Strengths, limitations, and recommendations for future research

Whilst two previous studies have qualitatively examined the association between shared identity and interoperability through interviewing responders during the initial months of the COVID-19 pandemic (Davidson *et al.*, 2022a; 2022b), the current study expands on this evidence-base through providing quantitative and behavioural evidence of an association between shared identity and interoperability. Furthermore, the three different data collection methods used (questionnaire data, discussion transcripts, and focus groups) provided the ability for triangulation in the data through combining quantitative, qualitative, and behavioural analysis. Triangulation is beneficial in research because it increases the rigour of findings (Leech and Onwuegbuzie, 2007) by testing the validity of the dataset through looking for convergence across multiple datasets (Cresswell and Miller, 2000), thus, strengthening any conclusions and recommendations that can be drawn from the study (Scandura and Williams, 2000).

Yet, despite the strengths of the study, there are also limitations that need to be addressed. First, there was an unequal number of participants in each group and an unequal representation from the emergency services. Ambulance participants were present in only two out of the four groups, and only one group had all three services represented. Of course, in order to provide the most useful and representative insights in the group dynamics, representations from all

services should be included. The dynamics of the group has the potential to shift if one service is not represented, thus the generalisability of the results to a full multi-agency response with all services present may be limited. Thus, it would be desirable for future research to include Police, FRS, and Ambulance representatives.

Second, the study included a relatively low sample size. Whilst quantitative analysis revealed no between-group differences, the qualitative analysis did reveal some differences. A larger sample size would have allowed us to tease out these differences more and have a better understanding of what the differences were and why they occurred. Furthermore, given the low sample size and unequal representation between the services, it is unclear whether the findings reflect the particularities of the participants involved in the study rather than indicating features of responders more generally. Thus, it would be useful for further research with larger sample sizes to examine this to provide a better understanding of the factors that might impact the development of a shared identity in multi-agency response to allow for the development of more targeted recommendations.

Of course, there are factors other than shared identity which are linked to improved group working. In a recent review of emergency services management research, Wankhade and Murphy (2023) identified factors which have been found to influence effective collaborations. For example, inter-organizational understanding of structures (Eide *et al.*, 2012), pre-existing relationships (Sparf AND Petridou, 2018), and a clear shared resource plan (Parry *et al.*, 2015). Therefore, this highlights that shared identity is not the only factor that can enable effective interoperability and any recommendations made from this research should be considered alongside these other factors that can support multi-agency working too.

Finally, whilst discussion-based exercises are useful for allowing participants to 'talk-through' plans (Cabinet Office, 2013), they lack the complexities and pressures of a real incident (Brown, Power and Conchie, 2021). This was evident in the current study due to the disparities between the findings and those of real-life incidents. For example, incident reports and inquiries consistently show that there are challenges with interoperability and applying the JESIP principles (Pollock, 2013; Saunders, 2022a). However, according to the self-report findings from the current study, JESIP principles were successfully adhered to. Therefore, this questions how applicable the findings from the current study are to a real-life incident. Yet, the behavioural analysis of the exercise transcripts revealed challenges with interoperability during the exercises which more closely aligns with incident reports and inquiries. Given the lack of complexities and pressures associated with discussion-based exercises, and the slight disparity in the findings of the present study, future research using a live exercise as a simulation for a real-life incident would be beneficial. Whilst live exercises also have their weaknesses in terms of lack of realism, they are more closely able to replicate the demands of a real incident and therefore would be useful to increase our confidence in the applicability of the current findings.

## Conclusions

The current study provides evidence of an association between shared identity and improved group working. Although stated in the Manchester Arena inquiry that JESIP principles failed on the day of the attack, the evidence provided here suggests that when responders follow JESIP principles, this can lead to improved joint working, albeit in a discussion-

based exercise situation. Thus, we argue it is the ability of people to effectively use the JESIP principles which is why joint working can often present challenges. With this in mind, and on the evidence provided in previous research, we argue that emergency response preparedness for interoperability needs to take into account psychological factors. Accordingly, we have provided evidence in the current study that shows that a sense of shared identity between responders from different organizations is associated with improved interoperability. As such, training and guidance for interoperability should include psychological factors. In particular, specific factors that help to develop, and make salient a sense of shared identity between responders should be included in training and guidance.

## Notes

<sup>1</sup> “The declaration of an Operation Plato incident triggers a multi-agency response designed to rapidly inform, mobilise, and operationally deploy the most appropriate resources” (Saunders, 2022a, p333).

<sup>2</sup> Also known as Tactical Coordinating Group (TCG) meeting, responsible for interpreting strategic direction, developing a tactical plan, and coordinating activities and assets (JESIP, 2021).

**Figure 1.** Schematic representation of identities at different abstraction within the emergency services.

## Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to ethical restrictions.

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