Research Article

Exploring the relationship between shared identity and interoperability: A mixed methods analysis of discussion-based multi-agency emergency response exercises

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Previous research demonstrates the persistent challenges between Police, Fire and Rescue, and Ambulance responders during multi-agency emergency response. Recently, the Social Identity Approach has been used as a theoretical guide to better understand these challenges through providing a psychological framework to understand relations within and between response organizations. The current study expands on this through six discussion-based exercises with responders from the emergency services. Correlational analysis of participants' identity levels and self-perceived joint working performance suggested a relationship between shared identity and improved perceptions of joint working. Analysis of the discussion transcripts identified some areas where joint working was challenged, for example the use of organisation-specific terminology. Finally, analysis of focus group discussions after the exercises suggested there are 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 evidence of an association between shared identity and multi-agency working. Implications for practice are discussed.

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Introduction

The multi-agency response of the UK emergency services has been beset by range of challenges that re-occur across incidents, as highlighted in incident inquiries (e.g., London 7/7 bombings: Hallett, 2011; Hillsborough Stadium disaster: Taylor, 1990; Manchester Arena Attack: Saunders 2022a; Grenfell Tower fire: Moore-Bick, 2019; cf. Pollock, 2013). Indeed, according to the public inquiry into the 2017 Manchester Arena attack, there were "significant failures" in the multi-agency response (Saunders, 2022a, p45). For example, communication and decision-making challenges present on the night of the attack resulted in conflicting information between the

three emergency services (Police, Fire and Rescue [FRS], and Ambulance Services) around a shared meeting point for the services, as well as no clear understanding of the suspected nature of the incident (Saunders, 2022b, p134). This is not just true of the UK emergency response either. Similar challenges have been documented in other countries too, such as America (e.g., 2001 World Trade Centre Attacks, Kean & Hamilton, 2004) and Haiti (e.g., the 2010 earthquake, Patrick, 2011). This demonstrates the persistence of multi-agency response challenges and highlights the need for a better understanding of why these challenges continue to occur.

Recently, researchers have used the Social Identity Approach to provide insight into why interoperability challenges occur (Davidson et al., 2022a; 2022b). Accordingly, we use this approach in the current study and provide rationale for its use below. But first, we introduce interoperability, before explaining the relevance of social identity processes to the challenge of interoperability.

Interoperability in the emergency services

Interoperability refers to the extent to which responders from different organizations can work together coherently as a matter of routine (Joint Emergency Services Interoperability Programme [JESIP], 2013) and has been a key focus in UK emergency management for over a decade (e.g., Pollock, 2013). In an attempt to combat the recurring interoperability challenges that emergency responders face, JESIP (2021) was introduced in 2012 providing standardised principles for joint working (e.g., communicating using language free from jargon, see Table 1). Yet, despite the introduction of JESIP, challenges with interoperability during multi-agency responses persist (Pollock, 2021).

Principle	Definition
Co-locate	Co-locate with other responders as soon as practicably possible at a single, safe, and easily identified location.
Communicate	Communicate using language which is clear, and free from technical jargon and abbreviations.
Coordinate	Coordinate by agreeing the lead organization. Identify priorities, resources, capabilities and limitations for an effective response, including the timing of further meetings.
Jointly understand risk	Jointly understand risk by sharing information about the likelihood and potential impact of threats and hazards, to agree appropriate control measures.
Shared situational awareness	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).

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

A key complexity that distinguishes multi-agency responses from single-service responses is that they require usually independent teams of Police, FRS, and Ambulance responders to work together collaboratively to achieve a shared goal (Bharosa et al., 2010). In other words, it involves the formation of a multiteam system (MTS; Marks *et al.,* 2001; Mathieu *et al.,* 2001). Importantly, not only are these teams within the MTS working towards a shared goal, they may often also have differing and potentially competing sub-goals that they must achieve in the pursuit of this shared goal (Power & Alison, 2017). For example, in order to achieve the shared goal of saving life and reducing harm, police responders may prioritise neutralizing the threat and securing the scene, FRS responders may prioritise evacuating casualties from the scene, and ambulance responders may prioritise treating casualties. These differing sub-goals can and do conflict with each other (Power & Alison, 2017). Crucially, the sub-teams within the MTS must work together to manage these potentially conflicting sub-goals, as well differing command structures, language, and procedures in order to provide an effective joint response (Brown et al., 2021; Van Scotter & Leonard, 2022).

MTS researchers have suggested that one reason why challenges in MTS group working persist is from the presence of multiple *identities* within an MTS (Connaughton et al., 2012; Luciano et al., 2018) - the role of social identity processes in interoperability is discussed in more detail below.

Social identity processes and interoperability

The Social Identity Approach (Tajfel & Turner, 1979; Turner *et al*., 1987) is a key framework in social psychology that can help us understand how people from different groups work together. According to this approach, a personal identity describes a person in contrast to others (e.g., 'I', 'me'), whereas a social identity psychologically connects people through a sense of 'we' and 'us'. In other words, shared social identity refers to people who view each other as members of a common group (Neville et al., 2020). Accordingly, a sense of shared identity (i.e., a shared sense of 'us-ness') within a group can provide group members with shared definitions of situations and common norms for behaving in those situations (Reicher *et al.,* 2010), foster trust and respect among group members (Turner *et al*., 1987; Haslam *et al.,* 2012), and facilitate coordination and cooperation between group members (Haslam *et al.,* 2009; Haslam *et al*., 2022).

An important consideration in the context of an MTS, however, is that people can have multiple social identities which can become salient in different contexts (Connaughton et al., 2012; Luciano et al., 2018; Milward & Haslam, 2013; Turner *et al*., 1987). For example, in a multi-agency emergency response MTS, responders can identify as their sub-team as Police, FRS, or Ambulance responders, but also as their superordinate MTS as emergency responders. In an exploration of the role of sub-group identities on MTS performance, research on military teams in the Netherlands showed that salient sub-team identities were associated with less trust and more conflict between sub-teams within the MTS (Wijnmaalen et al., 2019). Furthermore, emergency response MTSs were studied using undergraduate students who took on various roles in a simulated firefighting scenario (Cuijpers et al., 2016). Researchers found that participants' identification with the emergency response MTS was positively associated with MTS performance. This research highlights the important role that shared identity can play in MTS performance.

Accordingly, recent research has sought to expand on this through exploring the role of shared identity within multi-agency response teams with real emergency responders, rather than undergraduate students. Davidson and colleagues conducted two interview studies with responders working on the multi-agency response to COVID-19 (Davidson et al., 2022a; 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 included responders having a shared purpose in their joint responses, sharing difficult experiences with each other, and leaders strategically reinforcing a sense of shared identity through, for example, emphasising the shared goals of the response.

Davidson et al. (2022a; 2022b) provide useful insight into the presence of a shared identity between responders in these multi-agency teams. However, this research does not explore an association between shared identity and interoperability within these multi-agency teams. We know from previous research exploring the role of shared identity in MTSs, that shared identity is associated with improved MTS performance (Cuijpers et al., 2016; Mell et al., 2020; Wijnmaalen et al., 2019). Whilst the research by Cuijpers et al. (2016) provides a 'proof of concept' that an

association exists, and the research by Wijnmaalen et al (2019) provides prima facie evidence in support of the Social Identity Approach in MTSs, this exploration (to our knowledge) has not yet been conducted with real emergency responders. We seek to bridge this existing gap in knowledge in the current study through using discussion-based exercises with emergency responders from the Police, FRS, and Ambulance Service as a means to explore shared identity and interoperability.

Exercises play a central role in assessing existing capabilities in emergency response (Borrell & Eriksson, 2013). Exercises can take various forms, including live exercises (Skyrabina et al., 2017) and immersive simulations (Brown et al., 2020). Whilst exercises and simulations offer higher fidelity than discussion-based exercises (Alison et al., 2013), discussion-based exercises were chosen for the current study due to a mixture of epistemological and logistical considerations. In addition, discussion-based exercises provide 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; Borrell & Eriksson, 2013; Skyrabina et al., 2017). 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 to facilitate learning through providing opportunities to experience different responses, (ii) scenarios should provide this variation within and/or between scenarios, and (iii) interaction opportunities between participants should be provided to generate insights into different perspectives, as well an opportunity for collaboration. We incorporated these three recommendations in the current study - discussed below.

The current study

Based on the previously identified role of shared identity within MTS teams (Cuijpers et al., 2016; Mell et al., 2020; Wijnmaalen et al., 2018), as well as recent evidence that shared identity can arise in multi-agency response teams (Davidson 2022a; 2022b), the current study used discussion-based exercises to explore the relationship between responders' sense of shared identity and their ability to work together. 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 think they worked effectively together during the exercises?
- RQ3. Was participants' shared identity linked to their perceptions of how effectively they worked together during the exercises?
- RQ4. How did participants' work together during the exercises?
- RQ5. If there was a sense of shared identity, how did it develop?
- RQ6. How was shared identity linked to improved joint working?

For the purpose of analysis, RQs 1-3 were tested with two-tailed tests.

Method

Design

Participants took part in two discussion-based exercises in groups of three to six (6 groups in total). A within-subjects mixed-methods design was utilised whereby quantitative 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. Qualitative data was collected through analysis of exercise transcripts and 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. Participants were recruited via email where pre-existing contacts with the research team were asked to share information about the study with other responders within their organizaton. To ensure anonymity, participants were given a unique participant number (1-24; see Table 2).

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

Participant	Group	Organization	Job Title	Gender	Years in Service	Pre-existing relationships*	Multi-agency training**	Familiarity with JESIP
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

Table 2. Participant information

Participants took part in the study in their regional groups to minimise any between-region differences in response that may interfere with responders' ability to work together. Due to availability and operational commitments, the number of participants, and the number of representatives from the different services, in each group was unequal. The number of participants in each group ranged from three to six. Representatives from at least two of the emergency services were represented in each group, with one group having all three services represented (see Table 2 for full details of groups). Participants' average number of years in service was 20 years (max=30 years, min=8 years; see Table 2 for full participant information).

Materials

Exercises

As per Borrel and Erikson (2013), the exercises combined two sources of variation by using two evolving scenarios. Exercise 1 consisted of a flood at a primary school where several children and staff were trapped inside the school building and needed rescuing. Exercise 2 consisted of a shooting at a restaurant where several members of the public were injured and there was conflicting information surrounding the location of the gunman - see Supplementary Materials 1 for the full scenarios. The scenarios were elaborated and changed throughout the course of the exercise through the provision of subsequent information. The exercise scenarios were developed in consultation with subject matter experts from the emergency services to ensure the situations and challenges presented to participants were representative of what responders might experience in a real incident.

All groups completed both exercises and the order they completed them was counterbalanced across groups.

Pre-exercise questionnaire

The pre-exercise questionnaire contained two items relating to participants' 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 chosen because identification is associated with a psychological bond between group members (Leach et al., 2008). Items showed good internal reliability in the current study (r_{sb} >.90). See Supplementary Materials 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 perceived joint working performance (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). These items were chosen due to the JESIP (2021) being the standard training for interoperability in the UK. These items showed good internal reliability (α >.90). See Supplementary Materials 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 Supplementary Materials 4 for the full demographic questionnaire.

Focus group topic guide

To ensure consistency across measures, 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 joint working performance (e.g., "how closely do you feel you followed the JESIP guidelines?"). See Supplementary Materials 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. The lead researcher ran all exercises. 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.

After logging onto Microsoft Teams, the research provided participants with a link to the online survey software, Qualtrics. Participants had the opportunity to read the information sheet and ask the researcher any questions. They were then asked to sign an electronic consent form. After signing the consent form, participants completed the pre-exercise questionnaire via the same Qualtrics link.

Participants then completed Exercise 1. The researcher provided them 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. All discussions between participants took place verbally via voice discussions. Participants had one hour in total for each exercise. Following Exercise 1, participants completed the first post-exercise questionnaire, using the same Qualtrics link as previous. 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 semi-structured focus group run by the researcher which lasted approximately 30 minutes (min: 25 minutes, max: 36 minutes).

Finally, 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. Due to parametric assumptions being violated, non-parametric tests were used for analysis. One-sample Wilcoxon Signed Rank tests were conducted to compare participants' identity scores and perceived joint working performance scores to the mid-point value of 4 on the Likert scale, 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). A Friedman's test was conducted to

explore whether participants' identity scores changed across the study, and a Repeated-sample Wilcoxon Signed Rank test was conducted to explore whether participants' perceptions of their joint working performance changed between Exercise 1 and 2.

To answer RQ3, Spearman's correlations were conducted to explore the relationships between participants' identity scores, and their perceptions of their joint working performance.

Due to the challenge of recruiting busy emergency responders to this study, an effect-size sensitivity analysis was conducted to allow us to understand if we had enough power to detect effects (Giner-Sorolla et al., 2022). Sensitivity analyses were conducted for each statistical test using G*Power (Faul et al., 2007).

Discussion transcript data

To explore how participants worked together during the exercises (RQ4), exercise discussions were recorded and transcribed. Data was analysed using the framework approach (Pope *et al.,* 2000). A thematic framework was identified based on the joint working principles laid out in the Joint Doctrine as this is the standard by which UK emergency responders (JESIP, 2021): communicate; coordinate; co-locate; joint understanding of risk; and shared situational awareness (see Table 3 for coding framework). Relevant passages within the data were coded into one or more of the themes outlined in the coding framework. The lead researcher coded the dataset and met with the research team on a fortnightly basis to discuss the analysis.

Code	Description	Example quotes
Co-locate	Whether responders discussed co-locating with each other: Did responders discuss meeting face to face? Was a forward command point established? Did commanders identify timely on-scene briefings?	"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).
Communicate	The language used by responders and how it was shared between responders: was common terminology used? Was relevant information shared across services? Was M/ETHANE used to pass information?	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" (Group 6).
Coordinate	How responders discussed coordinating their actions: Were joint decisions on priorities made? Were actions joined up between responders? Was duplication of effort negated? Was there an understanding of the capability, capacity, and limitations of each other's assets?	"So the fact that the media have arrived and cordons and all the other bi, is our problem to a certain point, but it also isn't. I'd be expecting them to remain outside that cordon and I'm not getting involved" (FRS, Group 2).
Jointly understand risk	Whether responders shared an understanding of the risk of the incident: Were threats and hazards identified, understood, and treated differently by each emergency service? Were limitations of people and equipment identified, understood, and treated different by each service? Were capabilities of people, equipment identified, understood, and treated different by each service?	"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).

Code	Description	Example quotes
Shared situational awareness	Whether responders had a common understanding of: What had happened, what was changing throughout, the consequences of the events, priorities and objectives, each service's role in resolving the incident.	"We need to get them. Er so further flash flooding, what's that gonna look like, but also now I'm thinking about, from our point of, I'm thinking about officer safety welfare. What are the implications for emergency service personnel deployed [...] are there any other safe systems of work that needs to be brought in, and also to facilitate that? But again, the response is still yours. We're still, from a policing point of view, we're still securing the area and supporting you in delivering it" (Police, Group 3).

Table 3. Coding framework, with example quotes from data, for the discussion transcript data analysis, adapted from JESIP (2017) Exercise Assurance Framework

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 a semi-deductive thematic analysis (Braun & Clarke, 2006). This approach to analysis was chosen because, whilst there were no predetermined themes, the Social Identity Approach provided a general reference point to guide the analysis. The process of analysis involved the lead researcher transcribing the recordings, followed by reading and re-reading the transcripts. Initial codes relevant to RQs 5 and 6 were noted and discussed with the research team and potential themes were identified. The lead researcher then re-read the transcripts, coding relevant extracts to these potential themes. The research team then met again to finalise and define the themes (See Table 4 for thematic framework). The final themes were shared goals and shared frame of reference (RQ5); and motivation to work with each other, confidence, and increased trust and respect (RQ6).

Theme	Description	Illustrative quote
1. Development of a shared identity		
1.1 Shared goals	Any discussions about how any goals shared between responders from different response organizations influenced their ability to work together as a team or influenced the development of a bond or identity.	"I think ultimately [...] that professional relationship, I would say we're all pulling in the same direction. I think we we know that we want to have the best, most efficient way of resolving the incident erm that's the nature of us. I think working in the public sector and so everyone's got the same same goal" (FRS, Group 5).
1.2 Shared frame of reference	Any discussions around how shared principles (e.g., JESIP) or shared intrinsic values between responders from the different response organizations influenced their ability to work together as a team or influenced the development of a bond or identity.	"I think it's that that common language [...]. I think [Name of Ambulance responder] used about OPS discretion and confirmed that we use that as well er so we we did establish that that common playing field that ground that we all can work two and for so. Dare I say it, all the emergency service people are of a similar mindset, we're there to to make a difference and to support each other and help out. So er you know, I think that's really important that we are can do, will do, type of people rather than come up with problems, that we'll look for solutions" (FRS, Group 4).
2. How shared identity and joint working are linked		
2.1 Motivation to work with each other	Any discussions around how a shared bond between responders, or a shared sense of identity, increased participants motivation to work together, for example responders wanting to work with each other and share information in a way that is accessible to other responders.	"That's your point of view, well, how can I put across my point of view and my understanding to you know In your terms or something's gonna make a lot more sense for you erm so that's the kind of the relationship that builds up that you sort See what the other person wants and needs and their way of thinking and trying to build into that and everyone gets into the middle (Police, Group 5).
2.2 Confidence	Any discussions around how a sense of a bond or identity, or how the relationships between responders, increased their confidence both in their own	"The more we do it, the more comfortable we get about challenging each other as well, if we think something is not right [...] if we think something is not right, then freedom to speak up, and just to challenge and maybe understand the risk or something that that I haven't understood as a

Theme	Description	Illustrative quote
	abilities, but also in each other's abilities.	commander, is is easier to to approach and ask about and equally you know for me to be challenged" (Ambulance, Group 1).
2.3 Increased trust and respect	Any discussions around how a sense of a bond or identity, or how the relationships between responders, increased their trust and respect in each other.	"As you find out who people are you you know and understand that wealth of knowledge that they can bring which automatically gives you a certain amount of respect which then automatically makes you want to work together. [...] the more you do as a cadre of people, the more you perform better on the incident ground for me because you already have that relationship. There's nothing better than turning up at a job and seeing a familiar face from another service, seeing that face you know you can rely on and I guess as the scenarios build, I guess in the first scenario, yeah, I respect his job. OK so after the first scenario he knows what he's talking about, I'm gonna listen to him, he's got this opinion, and that's the that's the relationship building which then, I can't remember the exact word in your question, that that brings you to that kind of joint working together and JESIP-ness" (FRS, Group 2)

Table 4. Thematic framework and illustrative quotes

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

This section will be further separated by RQs 1-3. Sensitivity analysis suggested that the study was sufficiently powered for RQs 1-2, but partially underpowered for RQ3 (see Supplementary materials 6).

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

Participants' identity scores were significantly higher than the midpoint value on the Likert scale of 4 at each time point: baseline, (Mdn = 5.75), z = 3.78, p <.01, r =.77; Time Point 1, (Mdn = 6.00), z = 4.16, p <.01, r =.85; Time Point 2, (Mdn = 6.00), z = 4.11, p <.01, r =.84. This indicates that participants did experience a sense of shared identity both before and during the exercise.

Participants identity scores changed significantly over time, $\chi 2$ (2) = 13.20, p <.01. Post hoc analysis with Wilcoxon signed-ranks test was conducted with a Bonferonni correction applied (p <.017). Identity score did significantly differ between baseline and Time point 1, T = 3.08, p <.01, and between baseline and Time Point 2, T = 2.89, p <.01. However, identity scores did not significantly differ between Time Point 1 and Time point 2, T =.14, p =.89. This indicates that participants' sense of shared identity increased after taking part in the study, although it did not increase further between Exercise 1 and 2.

RQ2. Did participants work effectively together?

Participants' joint working scores were significantly higher than the midpoint value on the Likert scale of 4 at each time point: Time Point 1, (*Mdn* = 6.00), z = 4.23, p <.01, r =.86; Time Point 2, (*Mdn* = 6.00), z = 4.24, p <.01, r =.87. This indicates that participants did perceive that they worked well together during the two exercises in the study.

Participants' joint working scores were not significantly higher at Time Point 1 than at Time Point 2, z = 1.79, p =.07, r =.37. This indicates that perceived joint working did not improve in Exercise 2 compared to Exercise 1.

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

Participants familiarity levels with JESIP before taking part in the study was significantly related to their perceived joint working performance both during Exercise 1, r_s =.75, 95% BCa CI [.599,.846], p <.01, and Exercise 2, r_s =.55, 95% BCa CI [.195,.777], p <.01.

Participants' identity levels after Exercise 1 was significantly related to their perceived joint working performance during Exercise 1, r_s =.47, 95% BCa CI [.084,.745], p <.05, and Exercise 2, r_s =.75, 95% BCa CI [.599,.846], p <.01, but not during Exercise 2, r_s =.27, 95% BCa CI [-.168,.673], p =.19.

Participants' identity levels after Exercise 2 were significantly related to their perceived joint working performance during both Exercise 1, r_s =.46, 95% BCa CI [.059,.770], p <.05, and Exercise 2, r_s =.52, 95% BCa CI [.142,.796], p <.01.

There was no significant relationship between participants' identity levels before the study and their perceived joint working performance both during Exercise 1, r_s =.18, 95% BCa CI [-.234,.561], p =.40 and Exercise 2, r_s = -.12, 95% BCa CI [-.503,.245], p =.58.

Discussion transcript data

The results of the discussion transcripts are presented in relation to RQ4: how did participants' work together during the exercises? Themes are presented in relation to the five principles for joint working, as per JESIP (2021): co-locate, communicate, coordinate, jointly understand risk, and shared situational awareness.

Co-locate

Whilst participants were not able to physically co-locate with each other due to the nature of the study, participants in all groups discussed co-locating with each other during the exercises. 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 exercise, 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. Furthermore, in the flooding exercise responders in Group 6 made explicit reference to being at the same location and FRS responders requested that Police secured a cordon around this location to enable the safe delivery of equipment to the scene.

Yet, despite seemingly clear communication in the flooding exercise surrounding a joint meeting point, there appeared to be some confusion in some groups in the shooting exercise around a shared meeting point. For example, FRS participants in Groups 5 and 6 expressed concerns about 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 emphasised the importance of meeting with Police participants in person in order to discuss important aspects of the response, such as what had happened and to establish which areas they could safely work in.

Communicate

Five groups discussed using common frameworks for sharing information (e.g., M/ETHANE, JESIP, 2021). Although sometimes this information had to be requested. For example, in the shooting exercise, participants in Group 6 discussed using the M/ETHANE framework to share information, but instead of breaking down the information in terms of this framework, the conversations then became centred on the wish for intelligence gathering. The first stage of this framework is to state whether a major incident had been declared or not, however this was not discussed until 15 minutes into the discussion when a FRS participant specifically requested this information from the Police. Once the declaration of a major incident had been discussed, this appeared to trigger a more practical conversation about what specific actions would follow this, rather than the speculative conversations that had preceded. Similarly, in Group 2 an FRS participant initiated a conversation about this framework early on in the discussion. However, this was not discussed again until 17 minutes into the exercise when again the FRS participant mentioned formulating a M/ETHANE response.

Furthermore, whilst similar terminology was used by participants from different services, it is not clear that participants had a shared understanding of what this terminology meant. For example, during the shooting exercise, in Group 1 Police and FRS participants both used the word “clear” when discussing whether the scene was safe and how close to the scene FRS participants were able to be. This prompted apparent confusion between the Police and FRS participants. In this situation, the FRS participant said once the scene was clear they would deploy FRS crews. However the Police participants disagreed saying they would not let FRS participants near the scene at

this stage. In an attempt to clarify any potential misunderstandings, the Ambulance participant requested an explanation from the Police on their use of the word "clear". Similarly, in Group 6 there was confusion around the phrase "Silver meeting", with police and FRS participants each having a different understanding of what this meant, and time needed to be spent clarifying what participants from different services meant by this term.

Coordinate

All groups agreed that FRS would take the lead in the flooding exercise and Police would take the lead in the shooting exercise. In addition, when participants declared a major incident, most participants agreed on this in support of the needs of the other services, even if the incident was not a major incident for their organization.

Furthermore, participants in some groups were proactive in sharing their capabilities with the other services, as well as actively requesting information and assistance from the other services to support in their coordinated response. For example, in the flooding exercise, the Ambulance participant in Group 1 clearly explained the limitations of their organization, stating that they do not work with water. In addition, FRS participants in Group 2 requested specific support from the Police, such as a cordon to be set up to allow for the children to be safely evacuated from the school. Similarly, in the shooting scenario, FRS and Ambulance Participants in Group 1 explicitly requested information from the Police as to where they were safely allowed to work.

However, at times the conversations appeared to be relatively insular, reflecting siloed or hierarchical thinking. For example, participants tended to speak about how they would or would not "expect" other participants to be doing a certain task, but without explicitly stating they would have a conversation with them to confirm this. For example, a Police participant in Group 5 said it would be their responsibility to set up a joint meeting point, and they would not expect Ambulance participants to be doing this, but they did not discuss having this conversation with the Ambulance Service, creating a potential for duplicated action. In addition, at times some participants appeared to dismiss problems or concerns that were outside of their main priorities in the response. For example, in the flooding scenario during a conversation about protecting the school from further damage, a Police participant in Group 6 spoke about how this was an FRS problem to solve and not a Police problem, when a conversation had not yet been had between the services about stepping down the multi-agency response. Similarly, during the shooting exercise, an FRS participant in Group 2 spoke about how the arrival of the media to the cordon was not their problem, but instead a Police problem.

Jointly understand risk

All groups agreed that whichever organization led the response, they were also in charge of leading on a joint risk assessment (e.g., Police for the shooting exercise and FRS for the flooding exercise). Despite one service taking the lead in the joint risk assessment, participants from the other services still asked questions to help facilitate a joint understanding of risk. For example, in the shooting exercise, both FRS and Ambulance participants asked several

questions to Police participants about where they could safely work, what protective equipment they needed to safely work in that area, and what the known and/or potential risks were.

However, in the flooding scenario the risks seemed to be less clear, resulting in more confusion among participants around what they could safely do to support the response. A potential reason for this difference in understanding of risk in the two exercises was due to the nature of the risk itself. In the shooting exercise, even though the Police led the response and the positioning of the safety cordons, participants did not appear to question why safety procedures were in place, but instead questioned how they could safely operate in that situation. In comparison, in the flooding exercise the nature of the incident itself seemed to create confusion between participants in terms of what the risk was. For example, in Group 6 there was confusion among the Police participants about why three feet of water was a risk and why they could not wade through the water to rescue the trapped people. The Police participants in this group made it clear that communication of this risk from the FRS would be essential to prevent other Police participants ignoring safety procedures specified by the FRS and entering the water.

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 incident before they could make any operational decisions. This was a key focus at the beginning of the exercises when there were a lot of unknowns in terms of what had happened, why it had happened, and what the consequences of it were. For example, in the shooting exercise, 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. Therefore, their priority at that moment was communicating with the lead responders from the other services to establish some clarity concerning the situation. However, this need for intelligence and information early in the exercise discussion seemed to hinder explicit decisions being made, specifically in the shooting exercise where there appeared to be more unknowns regarding the situation.

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 focus group transcripts.

RQ5: Development of a shared identity

This section is separated into two themes: shared goals and shared frame of reference.

Shared goals. Across nearly all groups, participants said 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”, or “save

life"), whilst others more broadly stated they were "all here for the same thing" or their "goal is fundamentally the same".

When discussing what the benefits of having shared goals was, some participants said that having shared goals in the response helped to provide them with a shared purpose. Expanding on why shared goals are important in terms of their relationships and ability to work with responders from other services, one Ambulance participant in Group 1 said sharing goals meant they were on the "same page" during the response. Expanding on this, a Police participant in Group 2 said that these shared goals helped to facilitate a shared mindset between participants, which even though they were from different organizations, helped to create a feeling that they were on the "same team".

One FRS participant said 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). Furthermore, a Police responder in Group 5 expanded on this by recognising that whilst they have the same overarching goals, their priorities may be slightly different. However, spending time working together and recognising their shared goals, as well as their different priorities, helped to establish better working relationships between them. In addition, this participant said that these shared goals made them more aware of other organizations priorities and needs to achieve the shared goals, recognizing that there was more than just "a police way of doing things".

Shared frame of reference. All groups discussed how the joint operating principles laid out in JESIP provided them with a shared frame of reference to work towards. This helped bring them together during the exercises because they had a shared guide for how to approach the exercises and what to discuss. A police participant in Group 3 said that this shared frame of reference helped to create a bond between the participants in their group during the exercise. One participant said that participants in their group all used the JESIP principles to help guide their discussions and decision making which they found "reassuring" because it highlighted that they were "all on the same page" as they were discussing joint procedures, rather than organization-specific procedures (Ambulance, Group 1). In line with this recognition of shared procedures, participants said that similarities between them in terms of how they should be responding and what they should be discussing were highlighted. One participant said this created a sense of unity between participants in the group, despite being from different organizations:

> 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).

However, as well as a shared frame of reference created through shared principles, participants also discussed how psychological similarities, such as reasons for why they joined their respective organizations, and intrinsic motivations for being an emergency responder, also helped to create a shared frame of reference between

participants. Participants said this then helped them see each other as part of the same group. For example, one participant in Group 4 said that whilst participants from different organizations had different expertise and knowledge during the exercise, the fact they were all part of the emergency services created a "mutual recognition and respect" for each other because they have the same values. Another participant explained that the reasons why participants from different organizations joined their service were similar, which helped to create a shared frame of reference based on their intrinsic motivations, helping them see each other as part of the same team:

> 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 [...] 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).

RQ6. How shared identity and joint working are linked

This section is separated into three themes: motivation to work with each other, confidence, and increased trust and respect.

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, for example through listening to each other's input. Participants in two groups said that there were differences between organizations that made working together challenging, for example different appetites to risk (e.g., Group 2). However, despite these differences, participants recognised that it was the relationships and the bonds built between participants during the exercises that prevented those challenges having a negative impact on the response discussions, 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 (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 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 when they established each other's expertise.

Confidence. Several groups discussed how establishing a bond with each other helped to give participants confidence, both in other participants ability, as well as in themselves. One participant in Group 2 explained how establishing a relationship with other responders in the group helped them to start talking in more technical language because they had confidence the other participants would understand.

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 they felt comfortable challenging them due to the working relationship they had built together.

An established bond between participants not only gave participants confidence to challenge each other, but also confidence in responding to being challenged. In Group 6 an FRS participant said they felt comfortable responding to the challenge from a Police responder during the exercise about why 3 feet of water was a risk. The participants described a safe environment where they could challenge each other and respond to challenges openly because of the relationships between them.

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.

Establishing 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 area of expertise. For example, in Group 2, one FRS participant said they were "heavily relying" on the Police participant in this group to take the lead due to the exercise 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 participant 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 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

The current study explored the relationship between shared identity and interoperability through discussion-based exercises with six multi-agency emergency response groups. Specifically, we wanted to know whether participants experienced a sense of shared identity during the exercises, and if so how; whether participants think they worked together effectively, and if so, how; and whether shared identity was associated with interoperability, and if so how.

In this study we found a positive relationship between participants' identity and their self-perceived joint working performance during both exercises. This suggests that shared identity does play a role in interoperability during multi-agency response. Interestingly, whilst results show that participants did have a sense of shared identity at the beginning of the study before taking part in the exercises, this was not related to participants' self-perceived joint working performance in either exercise. This demonstrates two important findings. First, that shared identity can improve as a result of spending time together, for example through working together in the exercises, or through being part of the same study. Second, increased shared identity is associated with improved self-perceived joint working performance. This expands on previous research, showing that not only can the time spent together facilitate a sense of shared identity (Davidson et al., 2022b), but also that this developed identity is related to improved joint working, thus providing an important advance in our understanding of the role of shared identity in interoperability within emergency response multiteam systems (MTSs).

Previous research exploring the role of shared identity in MTSs showed that identification with the superordinate MTS in an emergency response scenario had beneficial effects on team performance (Cuijpers et al., 2016). However, this research was conducted with undergraduate students, thus whilst providing a useful proof of concept, lacks generalisability to real-world emergency responders. Therefore, the current study provides an important first exploration of the role of shared identity in interoperability with this specific population of interest.

As well as demonstrating that shared identity was associated with improved joint working, the focus group discussions provide evidence 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 consistent with a wide body of literature demonstrating the positive effects of shared identity on group working. For example, research has shown that a sense of shared identity can increase trust, respect, and cooperation between group members (Neville & Reicher, 2011; Reicher et al., 2010). In addition, this shared identity has been shown to improve coaction between group members (Drury & Reicher, 2020). This also supports previous research conducted specifically with MTSs that shows that MTSs coordinate more effectively when their subgroups share an identity (Cuijpers et al., 2016; Mell et al., 2020). Thus, this research provides support for the important role shared identity can play in group behaviour, specifically within MTSs.

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 standard 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 JESIP 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 have effectively worked together during the exercises, analysis of the discussion-transcripts showed some challenges in joint working. For example, in some of the conversations between participants there was evidence of 'silo thinking', where participants dismissed certain problems as only being relevant to other organizations and made assumptions that other organizations would carry out certain tasks. This demonstrates that at times, participants may have been focussed on their own sub-goals and priorities in pursuit of the overarching shared goal. Because of this, they may not have fully accounted for the needs and priorities of participants from other organizations. Indeed, as demonstrated by Cuijpers et al. (2016) inter-team conflicts between sub-groups within an MTS reduced the effectiveness of the overarching MTS performance. The qualitative parts of the current study support this finding, showing how potential conflicts between sub-groups within an MTS could arise and impact on joint working performance (e.g., through expectations about roles of other sub-groups).

Strengths, limitations, and recommendations for future research

The current study expands on previous research exploring shared identity and interoperability (Davidson et al., 2022a; 2022b) through examining an association between shared identity and perceived joint working. The mixed-methods approach used in the current study allows for a comprehensive understanding of the role of shared identity in interoperability. But 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. In four groups, just two out of the three emergency services were represented, therefore it could be argued that these multi-agency groups are not true representations of the groups that would be present in a real incident. 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 representatives from each service.

Second, the study included a relatively low sample size. Sensitivity analyses were conducted for each statistical analysis to understand whether the study had sufficient power to detect the effects reported. The sensitivity analyses revealed that the study was partially underpowered therefore the results of the underpowered analysis (correlational analysis in RQ3) should be interpreted with caution. In addition, there is also a potential concern of

non-independent samples as participants took part in the study in groups. Therefore, arguably the level of analysis should be the group and not the individual. However, the small sample size of groups (N=6) makes analysis at the group level difficult. Despite this, low samples are a common challenge in MTS research (e.g., Alison et al., 2015; Brown et al., 2021; Wilkinson et al., 2019). Research conducted specifically with the population of interest (e.g., emergency responders; compared an easier-to-reach student population) is important to ensure that findings are relevant to the population to whom the research is aimed at (cf. Boulton & Cole, 2016). Therefore, whilst future research is needed to further explore the role of shared identity in interoperability, the current study provides valuable insights into this role.

Third, variables were not manipulated in the present study and therefore whilst relationships between variables can be explored, causal effects cannot be determined. Therefore, future research would benefit from conducting an experimental design to allow for the presence of any causal relationships to be determined. In addition, 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 due to the artificial environment (e.g., discussion of scenarios rather than a real-world emergency). In the current study this was exacerbated by the virtual nature of the teams. Whilst this approach was chosen because of pragmatic reasons due to in-person meetings restricted due to the COVID-19 pandemic, this further separates the study from real-world complexities and challenges that emergency responders would face, limiting the generalisability of the results. Thus, whilst this study provides a useful insight into the potential role of shared identity during interoperability, future research in high-fidelity environments such as large-scale exercises (e.g., Waring et al., 2020) or immersive simulations (e.g., Wilkinson et al., 2021) are important to further explore this.

The aim of the research presented in the current paper was to explore the association between shared identity and interoperability. However, there are other factors that can influence interoperability during a multi-agency response, such as governance (e.g., Lakoma, 2023) and technology (e.g., Abdeen et al., 2021; Bharosa et al., 2010). Therefore, any recommendations made from this research should be considered alongside other factors that can impact interoperability.

Finally, in the current study we used the principles outlined in the Joint Doctrine (JESIP, 2021) as a framework to analyse how effectively participants worked together during the exercises, as well as a scale for participants to record their own perceptions of joint working. Whilst we chose this method because JESIP is the standardised approach by which emergency responders are trained on for joint working, we acknowledge that this is not a validated, nor systematic framework for assessing joint working performance and may miss potential behavioural and psychological indicators of interoperability. Therefore, in order to support the progression of interoperability research, we recommend that future research focuses on developing a systematic framework for analysing interoperability that can be validated.

Conclusions

The current study provides evidence of a relationship between shared identity and improved perceived group working. Thus, we argue that emergency response preparedness for interoperability needs to take into account psychological factors, such as shared identity, and that training and guidance for interoperability should include these factors. In particular, specific factors that help to develop and make salient a sense of shared identity, such as creating a shared frame of reference and emphasizing shared goals, between responders should be included in training and guidance.

Practitioner points

- A sense of shared identity is associated with improved joint working through providing responders with motivation to work with each other, giving them confidence in each other, and increasing their trust and respect for each other.
- Specific factors which were shown to facilitate a sense of shared identity among responders were responders having shared goals with each other and having a shared frame of reference (e.g., through practical principles, such as JESIP, or through shared intrinsic motivations).
- 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.

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