

An Exploration of Within-Dyad Interpersonal Emotional Influence in the Ambulance Service

Alexander W. J. Freemantle¹, Lorenzo D. Stafford², Christopher R. D. Wagstaff³ and Lucy Akehurst²

¹School of Education and Sociology, University of Portsmouth, UK, PO1 2HY

²Department of Psychology, University of Portsmouth, UK, PO1 2DT

³School of Sport, Health and Exercise Science, University of Portsmouth, UK, PO1 2DT

Correspondence concerning this article should be addressed to Alexander Freemantle, School of Education and Sociology, University of Portsmouth, UK, PO1 2HY. Email: alexander.freemantle@port.ac.uk

The research for this article was funded by the Economic and Social Research Council South Coast Doctoral Training Partnership (Grant Number ES/P000673/1)

Abstract

1
2 Ambulance service personnel experience an array of emotions when working on shift.
3 Nevertheless, there has been a lack of research to date regarding the interpersonal effects that
4 frontline staff members' emotional experiences and displays can have on their crewmates'
5 behaviour and emotional state. This study used a critical realist research approach to explore
6 the influential within-dyad effect of emotional exhibitions in frontline ambulance pairs.
7 Ambulance service personnel (N = 18) were recruited to take part in individual interviews
8 and to complete post-shift voice diaries. Using abductive analysis methods, evidence for the
9 Emotions as Social Information (EASI) Model processes, Affective Reactions and Inferential
10 Processes, was presented through examples of self-reported interpersonal emotional transfer
11 and emotional regulation. In addition, retroductive analysis of the interview and voice diary
12 transcripts identified facilitative factors affecting the enaction of these social emotional
13 processes. The themes of understanding each other, managing emotions differently,
14 expectations from above and responding to different callouts were reported to contribute to
15 the tendency for Affective Reactions and Inferential Processes to occur. These findings
16 provide support for the impact that EASI model concepts can have in performance domains
17 and offer evidence to suggest how these socially influential processes may be contextually
18 facilitated. The results presented in this study can be used by ambulance service trusts to
19 better understand and improve the emotional relationships of their frontline dyads.
20 *Keywords:* EASI model, interpersonal, dyad, ambulance service, emotion

21 **An Exploration of Within-Dyad Interpersonal Emotional Influence in the Ambulance** 22 **Service**

23 The mental and physical demands of frontline ambulance service personnel are
24 extreme (Brewis & Godfrey, 2019). The role can be physically taxing, cognitively
25 challenging and staff may be regularly exposed to traumatic events (Clompus & Albarran,
26 2016). Nevertheless, shifts can also involve highly rewarding callouts which result in positive
27 outcomes (Granter et al., 2019). The culmination of these emotional experiences can lead to
28 an intense environment that can impact frontline staff across a range of factors. For instance,
29 the experience of negative emotions, such as anxiety, have been shown to affect paramedic
30 performance while working (Regehr & Le Blanc, 2017). Similarly, the psychological
31 wellbeing of ambulance staff can be impacted by the positive and negative emotions that are
32 experienced on shift (Lawn et al., 2020). Staff must therefore successfully navigate these
33 emotional states while striving to provide high quality care for their patients.

34 Working in partnership with ambulance service colleagues while on shift can help
35 frontline staff to allay the challenges they experience in highly emotional scenarios (Lowery
36 & Stokes, 2005). In the United Kingdom, ambulance service dyads largely consist of a
37 combination of paramedics and emergency care assistants. Ambulance service staff
38 performance has been shown to be impacted by the teamwork capabilities and frequent intra-
39 dyad communication of these dyadic relationships (Patterson et al., 2017). Drewitz-Chesney
40 (2019) explored the prevalence of emotional discussions in ambulance dyad relationships and
41 found that the within-dyad communication can be identified as positive, negative or neutral.
42 The emotional valence of this communication resulted in different outcomes for the
43 individuals. For example, positive interpersonal emotional discussions could reduce
44 ambulance service teams' mental distress and improve wellbeing (Drewitz-Chesney, 2019).
45 Interpersonal emotional processes, such as those demonstrated in the Emotions as Social

46 Information (EASI) model (Van Kleef, 2009), can be facilitated by intense emotional
47 experiences, emotional communication and close relationships. The above evidence indicates
48 that while on shift, ambulance crewmates are exposed to these social contextual
49 characteristics (Filstad, 2010).

50 In developing his EASI model, Van Kleef (2009) suggested that in the same way
51 personal emotions can provide information and influence our own behaviour, outward
52 emotional expressions can also affect and inform other individuals. Individuals rarely
53 experience and express emotions independently, consequently, those in close proximity can
54 observe others' emotional expressions and be influenced by them (Van Kleef, 2010). As
55 such, Van Kleef's work highlights the role of social interactions and relationships in our
56 emotional experiences. The EASI model presents two distinct processes through which an
57 individual's emotional expressions can affect an observer (Van Kleef, 2010). The first,
58 Affective Reactions, refers to instances where emotional expressions can cause emotional
59 responses in observers which can subsequently influence their behaviour. This process is
60 evident in emotional contagion, defined as the interpersonal transfer of emotion (Hatfield et
61 al., 1994). Similarly, these Affective Reactions can impact the formation of positive or
62 negative social impressions. For example, observing expressions of happiness can often
63 improve interpersonal impressions while observing anger can decrease liking and relationship
64 satisfaction (Van Kleef, 2010). The second EASI model process in which emotions can cause
65 interpersonal influence is through Inferential Processes. Observing and identifying another
66 individual's emotional response to a situation can be useful in informing one's own
67 emotional states or behaviour. For instance, an individual's expression of sadness may cause
68 observers to infer that the person has experienced an upsetting event and thus interpersonal
69 emotional regulation is required through offering comfort or support. Interpersonal emotional
70 regulation is the act to try to control or manage another's emotional state (Zaki & Williams,

71 2013). While not directly addressed in their work, Drewitz-Chesney (2019) demonstrated
72 evidence for this process in paramedic pairs, whereby crewmates expressed that they
73 “checked in” with and comforted their partners following troubling experiences.

74 Evidence for the processes related to the EASI model has been presented across a
75 range of performance domains such as sport (Friesen et al., 2020) and the military (Wagstaff
76 & Weston, 2014). Similarly, interpersonal emotional concepts have been identified within
77 health care settings including in decision making in oncology departments (Treffers &
78 Putora, 2020) and the shared emotions that develop in hospital teams (Petitta et al., 2017).
79 Within specifically the emergency services, police officers demonstrate EASI model
80 interpersonal processes when they routinely use their own emotions to signal pertinent
81 information to offenders to control or dominate emotional interactions (van Gelderen et al.,
82 2011). Although their interactions with the public are often less hostile, ambulance service
83 employees must also consider the interpersonal effect of their own emotional displays during
84 patient-clinician exchanges in emotionally intense situations (Williams, 2013). Frontline
85 ambulance staff also experience and express a wide range of intense emotions in the presence
86 of their crewmate throughout their shifts together.

87 The complex relationships and extended periods of time that frontline ambulance
88 service pairs spend together provide an opportune social context for interpersonal emotional
89 influence (Clompus & Albarran, 2016), yet social emotional processes have not been
90 explored within the ambulance service. Drewitz-Chesney (2019) outlined some of the
91 benefits that emotional discussions can elicit in paired paramedic teams, such as increased
92 camaraderie and the development of interpersonal support. These benefits have been
93 demonstrated across a range of organisational domains and indicate why organisations,
94 including ambulance service trusts, are actively encouraging emotional communication
95 (Clark et al., 2021). The impact of verbal emotional communication demonstrated by

96 Drewitz-Chesney (2019) indicated that ambulance service employees were adept at
97 communicating and identifying social information. Nevertheless, emotional expression
98 extends beyond verbal discussions and, when working together, other forms of emotional
99 communication may socially influence and impact frontline staff. These instances of
100 emotional expression may be non-verbal, resulting from mechanisms such as eye contact,
101 facial expressions and gestures rather than simple verbal discussion. Similarly, owing to the
102 occasional necessity for a managed communication, paramedics operate in environments
103 where implicit and explicit expression is a further consideration. Explicit emotional
104 expression refers to a conscious, deliberately enacted expression process, while implicit
105 expression is a type of emotional expression that is not consciously planned (Braunstein et
106 al., 2017). As such, the emotional expression tendencies demonstrated by frontline
107 ambulance staff may exist across a continuum of verbal and non-verbal, and explicit and
108 implicit communication. Consequently, an investigation that considers the range of emotional
109 communication measures exhibited by ambulance service pairs would significantly advance
110 the field in better understanding these performance relationships.

111 Factors affecting the propensity and process by which an individual's emotions
112 impact upon social interactions in general life have been outlined in the literature. In his
113 introductory EASI model explanation, Van Kleef (2009) posited that any emotional social
114 norms and the manner that an emotion is expressed may influence an observer's behavioural
115 response to expressions. Affective reactions such as emotional contagion have also been
116 shown to be related to the intensity of the emotional expression (Hatfield et al., 2014).
117 Similarly, the strength of the relationship and the situational social norms have also been
118 found to impact upon the susceptibility for interpersonal emotional regulation in performance
119 domains (Tamminen & Crocker, 2013). Situational norms, such as the expectation to
120 demonstrate emotional labour, may be particularly relevant in affecting interpersonal

121 emotional influence in the ambulance service. Emotional labour is the effortful and controlled
122 self-regulation of emotion in order to align with the emotional requirements of a job role
123 (Martinez-Inigo et al., 2007). Evidence of emotional labour when focused on direct patient
124 contact has been identified in paramedic samples (Williams, 2013) and recognised as a
125 requirement for role competency (Filstad, 2010). Nevertheless, the extent to which the
126 deliberate shielding of emotions in this work context affects within-dyad interpersonal
127 emotion has yet to be investigated. As such, this research affords an interesting possibility to
128 explore the impact of emotional labour on the emotional reactions and behaviour of
129 paramedic crewmates.

130 The staff members' requirement for emotional coping in response to the experience of
131 traumatic jobs, as well as daily hassles, may also impact the adoption of EASI model
132 interpersonal emotional concepts. For instance, staff members' emotional coping capabilities
133 have been shown to affect the impact that intense experiences can have on ambulance service
134 employees (Mildenhall, 2012). This coping can be demonstrated through a variety of positive
135 and maladaptive techniques (Avraham et al., 2014; Warren-James et al., 2022) although no
136 evidence exists to surmise the impact that these specific techniques may have on EASI model
137 affective reactions or inferential processes. In sum, in addition to a lack of research
138 investigating evidence of social emotional processes in ambulance service dyads, the
139 mechanisms which facilitate these processes in an emergency services context are also not
140 currently clear.

141 To address the gaps in the literature outlined above, the aims of this exploration were
142 to identify instances of interpersonal emotional phenomena facilitated through Affective
143 Reactions and Inferential Processes, and subsequently to identify factors that may enable
144 occurrences of these concepts for ambulance crew dyads. This will be the first investigation
145 of the EASI model processes in frontline ambulance service dyadic relationships. Evidence

146 from similar domains suggests that the social impacts of emotional displays in close-knit
147 ambulance service teams will be far reaching and crewmates may interpersonally influence
148 each other through emotional expression. In order to investigate the study aims, participants
149 took part in interviews and completed post-shift voice diaries. A critical realist research
150 approach was employed to conduct the study. Critical realism allows for a deep exploration
151 of the phenomenon of focus and encourages the identification of underlying facilitative
152 mechanisms which can explain the presence of these phenomena (Wiltshire, 2018).

153 **Method**

154 **Research Design**

155 This study was conducted from a critical realist philosophical stance. A critical realist
156 approach refers to both positivism and constructivism in such a way that allows for the
157 discovery of a truth which is not individually constructed, but that which is also not constant
158 across all mechanisms and contexts (Ronkainen & Wiltshire, 2021). This philosophical
159 position enabled the authors to explicate and identify, via interview transcripts, the
160 fundamental social emotional concepts associated with the EASI model in ambulance service
161 pairs, and subsequently to undertake retroduction to identify factors and mechanisms that
162 influence the generation of these emotional phenomena (Ritz, 2020). By adopting this
163 standpoint, we recognised the impact that the EASI model has in performance team
164 relationships across multiple domains (see Friesen et al., 2020; Treffers & Putora, 2020), yet
165 we wished to discover the subjective interpretations that influence the contexts of this theory
166 within specifically the ambulance service domain. In addition, a voice diary approach
167 allowed for a corroborative method to explore the hypothetical theoretical structures and
168 contributory mechanisms that were identified in the interview phase (Hu, 2018).

169 **Participants**

170 The participants were frontline ambulance service personnel recruited from three UK
171 Ambulance Service Trusts. In total 18 participants were iteratively recruited ($n = 13$ male, $n =$
172 5 female) before an in-situ pragmatic data collection completion decision was made. This
173 process, as recommended by Braun and Clarke (2019), was completed during data collection
174 and allowed for the quality, adequacy and richness of the data to be used as a consideration
175 for a suitable end point. Sixteen of the participants were recruited as colleague pairs and
176 completed both the interview and voice diary phases of research. Two participants were
177 recruited individually and took part in just the interview phase. The interview phase required
178 no dyadic interdependence and therefore these individuals could be included without a
179 crewmate. Six of the pairs consisted of one qualified paramedic and one Emergency Care
180 Assistant, and two of the pairs comprised of two paramedics. The two individual participants
181 were paramedics. The sample included one female-female pair, five male-male and two male-
182 female pairs. The participants had worked for the ambulance service for between 1 and 20
183 years ($M = 5.9$ years, $SD = 4.9$ years).

184 **Procedure**

185 Each of the three Ambulance Service Trusts was approached for collaboration
186 following both institutional ethical approval (SHFEC 2020-080) and NHS Health Research
187 Authority approval (20/HRA/6255). The participants voluntarily contacted the Principal
188 Researcher if they wished to be recruited to the study with a crewmate. Details of the study
189 were then sent to the prospective participants and consent was sought.

190 The participants were asked to talk in their voice diaries about two events that had
191 occurred in the shift immediately prior to completing the recording. This instruction led to
192 most voice diaries being recorded on the same day as the shift. The participants were
193 informed that their voice diary must be recorded in private but should relate to the same two
194 key events as their partner. First, the participants summarised the key details of the two

195 events, and then discussed their experiences of the emotional events. The participants were
196 also instructed to discuss their assumptions regarding their partner's experiences of the
197 events. Once these diaries were recorded, the audio files were sent to the Principal
198 Researcher. The average length of the voice diaries was 9 minutes 55 seconds ($SD = 5m\ 45s$).

199 Following the voice diaries, the Principal Researcher arranged for each of the 16
200 paired participants to take part in a semi-structured individual online interview. The two non-
201 paired participants also took part in these individual interviews. The interview questions
202 focused on the main aims of the study and contained both primary questions and secondary
203 probes. First, the participants were asked introductory questions regarding their experiences
204 of their role in the ambulance service and of working in dyads. The second section focused
205 on the emotions that the participants and their partners typically experience and their
206 emotional expression tendencies while on shift. The participants were also asked to provide
207 specific examples of emotion inducing callouts that they had recently attended and any
208 instances when they had experienced unfamiliar emotions. The interview concluded with
209 questions regarding the participants' general emotional expression outside of work. Prior to
210 the study, the efficacy and validity of the interview schedule was assessed using expertise
211 from the research departments at two of the participating Ambulance Service Trusts.
212 Following these evaluative discussions, minor modifications were made to the interview
213 guide which included ensuring the ambulance service specific vocabulary and role
214 descriptors were used in the correct manner and that the questions were suitable to elicit
215 informative responses. The interviews lasted between 35 and 85 minutes ($M = 52$ minutes,
216 $SD = 10$ minutes) and were each audio recorded in their entirety.

217 **Data Analysis**

218 The data were analysed in accordance with the critical realist philosophical stance.
219 Specifically, Hu's (2018) analytical steps for critical realism research were utilised as a

220 foundation for the analysis method. The analysis used both abductive and retroductive
221 methods in a complementary method of inquiry. Abductive analysis methods involve the
222 integration of theory with observations, while retroduction is a method of uncovering the
223 mechanisms fundamental to the development of a specific phenomenon (Meyer & Lunnay,
224 2013). These methods were utilised in collaboration as abduction can provide the preliminary
225 work for the deployment of retroductive inferences (Ritz, 2020). First, the interview
226 transcripts were analysed abductively using thematic analysis to identify the focal social
227 events for this study. In this case, the focus was on interpersonal emotional phenomena
228 associated with the EASI model (Van Kleef, 2009). Following this, retroductive thematic
229 analysis was used to further the depth of the inquiry and establish facilitative structures and
230 mechanisms which impacted upon the tenability of the EASI model processes in the
231 ambulance service partnerships. Finally, the voice diary transcripts were analysed in a similar
232 manner to the interview transcripts in order to corroborate the conclusions drawn from the
233 abductive and retroductive methods previously completed. All thematic analysis in this study
234 was completed adhering to Braun and Clark's (2012) reflexive thematic analysis framework.
235 This process began with reading and re-reading the interview and voice diary transcripts to
236 become familiarised with the data. Following the familiarisation process, excerpts of the data
237 were coded with labels, which generated the initial codes. The NVivo software program was
238 used for this process. These codes were then clustered and grouped together into themes and
239 thus higher order themes. These themes were continually reviewed and modified until they
240 were finalised, and they were then defined and named in a succinct informative manner. All
241 of the participant names were replaced with pseudonyms.

242 **Research Quality**

243 Ronkainen and Wiltshire (2021) outline three principles that can be used to assess and
244 guide the validity considerations of a critical realist exploration. The first principle relates to

245 utilising a focus on ontological plausibility. Ontological plausibility describes the act of using
246 plausible theories as explanations and descriptions of real-world events (Harre, 2013). As a
247 result, the validity of research is positively related to the extent to which the research is
248 ontologically plausible. In this study, the EASI model was used as it is a well-established,
249 empirically supported model within social psychology and is prominent in contemporary
250 emotion theory. Empirical adequacy is a further guiding principle for a valid critical realist
251 research study, which states that researchers must gather sufficient data. Techniques to
252 achieve sufficient data collection may include using multiple methods, engaging with the
253 focal research environment, and ensuring that the participants are suitable (Ronkainen &
254 Wiltshire, 2021). Each of these criteria was achieved in the current study using multiple
255 qualitative data collection methods (voice diaries and semi-structured interviews), extended
256 collaboration and planning with the Ambulance Service Trusts and ensuring that participants
257 were recruited from the target participant sample (ambulance crew members). The final
258 principle is that of practical utility. Greater validity can be achieved when the findings of a
259 study can be used to make changes and impact the world within the contexts investigated
260 (Ronkainen & Wiltshire, 2021). The current research philosophy directly adopts this principle
261 through the explanatory and causally relevant approach used to consider the EASI model
262 processes (Archer, 1998). Identifying the mechanisms through which interpersonal emotional
263 influence occurs in ambulance service pairs can provide direct impact and utility for frontline
264 ambulance service staff in navigating complex social issues.

265 **Transparency and Openness**

266 The study design, including sampling and research quality considerations, as well as a
267 description of the analysis methods, are explained in detail. The study design and its analysis
268 were not preregistered and this is not a replication study. All data and research studies
269 discussed in this manuscript have been correctly cited. Our research material is available in

270 the supplementary files, although data cannot be shared owing to institutional and NHS
271 ethical protocols regarding the sensitivity of the data and the risk of identification. We were
272 guided by the qualitative journal article reporting standards in the completion of this project.

273 **Results**

274 **Interpersonal Emotional Concepts**

275 Evidence of affective displays eliciting an emotional change in crewmate observers
276 (Affective Reactions) and behavioural change resulting from observer inferences (Inferential
277 Processes) were presented in all 18 of the interviews and all 16 of the recorded voice diaries.

278 *Affective Reactions*

279 Two examples of affective reactions were identified within this data: affected by
280 crewmate and shared emotions.

281 **Affected by Crewmate.** The frontline ambulance service staff outlined situations in
282 which their emotional displays affected their crewmates' emotional states, and instances
283 when they were emotionally affected by their crewmates' expressions. Darius described
284 being affected by a crewmate's frustrated expressions on route to a job, "he was swearing all
285 the way to the job and obviously that affected the emotions, so I was maybe not too happy
286 with his attitudes on route". Petra also discussed an incident when her impression of her
287 crewmate was impacted by the crewmate expressing negative emotions in the presence of a
288 patient. Petra explained that her crewmate exhibited this negativity through "having the hump
289 [being moody]", "getting irate" and "huffing" because the patient was out of the crew's local
290 area. She stated, "I was very angry I'm quite passionate about end of life, and actually that
291 was disgusting her behaviour (...) if we show up with that attitude then it's just disgusting so
292 that made it very difficult".

293 Evidence presented in the voice diaries also made it clear that crewmates could be
294 emotionally affected by their partners' emotional expressions. This impact could be both

295 positive or negative. During one job, Noah described feeling better after noticing that his
 296 partner displayed guilt after leaving him alone with a difficult patient and relative. Noah
 297 stated that he had been dealing with the “[the patient and relative] on my own...so even with
 298 a mask on, the look of guilt on his face when he returned made me at least smile”.

299 **Shared Emotion.** Evidence was also presented which indicated that crewmates
 300 experienced interpersonal emotional transfer. Instances of collective emotions and both
 301 conscious and unconscious emotional contagion were identified in these data. According to
 302 John, “if someone’s being quite chirpy [a positive emotion that may result in a cheerful
 303 disposition], you can’t help but be chirpy”. This uncontrollable emotional transfer can lead to
 304 the development of collective emotions during the shift, as described by Harry, “I think we
 305 do share a lot of emotion, I think working as a crew on an ambulance is quite a unique
 306 dynamic situation because we are quite emotionally in tune most of the time”. Thomas
 307 described within-dyad collective frustration when trying to drive to a job while other road
 308 users were not giving way to the ambulance and driving dangerously, “my crewmate was of
 309 similar frustration and disbelief, anger at some of the people that we came across as we were
 310 attempting to make progress”. Additionally, one participant explained how their crewmate’s
 311 negative emotional displays can cause within-dyad emotional transfer and negatively affect
 312 the rest of the shift:

313 It affects me if I’ve come in with like a nice positive attitude happy and smiley and
 314 then I’ll see her there and she’s you know very short and not responding to what I’ve
 315 talked about. I’ll be like ‘Oh’ [*participant slumps shoulders and exhibits an annoyed*
 316 *facial expression*] I just think ‘oh this is gonna be a tough shift’. (Elizabeth)

317 ***Inferential Processes***

318 Observers can draw inferences from an individual’s emotional expressions and these
 319 inferences may subsequently lead to a change in the observer’s behaviour. Three principal
 320 scenarios were found where inferential processes were present in the frontline ambulance

321 service employee accounts: interpersonal emotion identification, interpersonal emotional
322 regulation, and non-verbal emotional communication.

323 **Interpersonal Emotional Identification.** Gary succinctly summarised his approach
324 to identifying his partner's emotions by stating, "it's how they are, how they react to you and
325 how you react to them". These methods of identifying a crewmate's emotions were
326 demonstrated by all of the frontline ambulance service staff. For instance, in John's voice
327 diary, he explained that he could see a situation was upsetting for his partner by "looking at
328 his face and his demeanour". Andy also mentioned that they could identify that their
329 crewmate was anxious by "the way he kind of put himself, you can sort of look into his eyes
330 and see his mind was moving a million miles an hour". A crewmate's working behaviour was
331 also used as an indicator of their emotional state. In David's voice diary, he described how he
332 had identified his crewmate's heightened emotional state through their driving:

333 Gary would have been doing the advanced paramedic work, and also he was driving,
334 so I think he would have been quite, maybe not excited, but you know the adrenaline
335 would have been going you know, we got there very quickly it was a very fast drive
336 through town. (David)

337 As well as these examples of interpersonal emotional identification through non-
338 verbal expression, the process of emotional identification also occurred simply through verbal
339 intra-dyad discussions. Ibrahim explained that because crewmates "know you're going to
340 spend 10 hours with them, they normally tell you if they're having a bit of a crappy day".

341 **Interpersonal Emotional Regulation.** The participants recognised the importance of
342 regulating their crewmates' emotions, for instance David stated:

343 It wouldn't have been in anyone's benefit for me to say, yeah, you've cocked up there
344 you know because he was quite a fragile chap anyway, so you have just kind of got to
345 manipulate, not manipulate, you've got to manage his feelings. (David)

346 An example of this interpersonal emotional management was also described by Petra
347 who explained that when her crewmate can "get a bit anxious" and starts "freaking out
348 [stressing]" she "[tries] to just bring him down and say doesn't matter because we're a team,

349 we're going to do it together". The participants also described collective interpersonal
350 emotional regulation, a process in which crewmates collaboratively worked to improve the
351 collective emotional state of their partnership. In his voice diary, David explained that dark
352 humour was used to refocus the paired crewmates after a frustrating job:

353 We both have terrible black humour which is very inappropriate and I think at the end
354 of the job we were both quite frustrated by the girls who called and the way the job
355 had been described and I think there was a certain sense of release at the end of it
356 where we both said incredibly dark things. (David)

357 Similarly, Darius described how he and his partners try to stay positive during shifts:

358 Towards the end of the day you might be more sluggish and by that point you're
359 maybe both a little bit more tired. You just get to the end of the shift, you're both
360 talking about the funny things that happened that morning, and then just try and keep
361 the positivity going that way again. (Darius)

362 **Non-verbal Emotional Communication.** The participants explained that they
363 indicated and communicated their emotions to their crewmates by non-verbal mechanisms.
364 For instance, non-verbal emotional communication was used deliberately by staff to convey
365 an emotional message to their partner. Gary explained in his interview how he non-verbally
366 demonstrated to his partner that he could not cope with a patient's behaviour, "eye contact
367 was made. It's just that little kind of, those tiny little body language movements which are
368 like yeah, 'I'll be off now' and yeah, he knew that I could not cope with it".

369 Similarly, Charlie explained, in his voice diary, that eye contact was used to indicate
370 support for his partner when a patient had become domineering. Charlie stated that the
371 patient, "sort of pointed the walking stick in Petra's way in just almost like a form of
372 domineering which we weren't reacting to, I made eye contact with Petra instead to show I'd
373 seen it". Another participant explained that taking a patient's pulse for an extended period of
374 time was used by their crew "as an indicator for each other of, like, help", so that their partner
375 could offer procedural or emotional support. Alternatively, non-verbal emotional
376 communication can be just as emotionally communicative when spontaneous in nature and

377 less controlled. For example, Noah explained how relief can be communicated quickly
378 through non-verbal mechanisms:

379 I've had a choking child before and you get there and the child is crying [which
380 indicates that the child is breathing] and both of you just look, I mean there are no
381 hugs and kisses or anything else, but you just look at one another and it's like oh
382 thank God for that. (Noah)

383 **Mechanisms Affecting the Interpersonal Emotional Concepts**

384 We used specifically retroductive methods to uncover the underlying facilitative
385 mechanisms for the interpersonal emotional processes described above. Four themes were
386 identified which each included secondary themes that further explained how EASI model
387 processes emerged in these crewmate pairs.

388 *Understanding Each Other*

389 The data showed that the relationship that the crewmates shared was integral in
390 determining whether the pair experienced interpersonal emotional influence processes.

391 **Relationship Closeness.** The ambulance service employees discussed that they
392 experienced stronger attachments with some crewmates compared to others, Andy stated,
393 “we just click, you click with some you don't with others”. These relationship differences
394 were shown to impact upon the likelihood and the type of interpersonal emotional concepts
395 that were experienced by the crewmates. Andy also described that the strength of his
396 relationship with his partner meant that they were better able to identify each other's
397 emotional states. He explained, “I'm very good at reading Harry in that instance, because I'm
398 quite close to him, I know when he's having a good day or when he's having a bad day”.

399 As well as the interpersonal identification of emotion, the participants also described
400 being more likely to explicitly share their emotions with a crewmate to whom they felt close.
401 For instance, Hannah explained in her voice diary that her and her partner are, “very good at
402 reflecting and debriefing because I think we have a very strong partnership, we discuss most
403 jobs all the time just to make sure we're both happy”. Additionally, Oliver explained that, “if

404 it's somebody you don't like or don't trust particularly, you're not going to start, you know,
405 spilling out your heart about everything". Similarly, Noah stated that, "say I'm working with
406 Darius, who I have a good partnership with, I'll be more outgoing and open in myself". It is
407 likely that these more authentic emotional displays encouraged more interpersonal emotional
408 influence through the EASI model processes.

409 **Experience Working Together.** As well as the pair closeness, the experience that the
410 pair had working together also affected their likelihood of experiencing interpersonal
411 emotional influence. This experience was affected by both the time spent working together
412 and the fact the crewmates could be "bonded" after attending "proper jobs" together. These
413 "proper jobs" involved patients with more life-threatening illness or injury such as cardiac
414 arrests or road traffic collisions. The participants also described a better emotional
415 understanding when they had worked with their partner for a long period of time. For
416 example, Harry described that, "particularly people who work together long term, so Andy
417 and I, is that we think on a similar wavelength". In addition, the interpersonal emotion
418 identification is often improved for crewmates following an extended number of shifts
419 together. Abdul explained, "if I've got five days with him, on the third day [if] I'm really
420 cranky for some reason, he picks up on it quite quickly". George also used his experience
421 working with his crewmate to identify that they were calm at the scene of the incident:

422 It's because we've worked together for the best part of a year, we know each other's
423 character, we know how each other work, we can probably pick up subconsciously on
424 like signs from each other as to when somebody thinks something's wrong, not wrong
425 and you know when we're panicking and when we're not panicking. (George)

426 As well as an improved emotional identification, an extended period of working
427 together can also facilitate an interpersonal emotional transfer. Megan explained, while
428 working with an especially "calm" and "level-headed" crewmate, that "this is my third week
429 in rotation [with the crewmate], so I'm sort of in my chill stage now".

430 **Support for your Crewmate.** George outlined that ambulance service employees felt
431 an obligation to support their crewmates who may be struggling emotionally and that this
432 often resulted in interpersonal emotional regulation and staff members taking steps to control
433 and manage an emotional situation for their crewmate. Similarly, John explained that he felt a
434 responsibility to support his crewmates and interpersonally manage any distress that they
435 were experiencing during the job:

436 If I look at somebody and they're not really coping with it and they look a bit
437 distracted or whatever, I'd be like 'if you want to, feel free to go and sit in the truck' (.
438 . .). Yeah generally I'll ask them to step outside so I can then deal with whatever's
439 going on and then have a chat afterwards and sort of see what the issue is then. (John)

440 Crewmates were generally able to identify emotional distress in their partners and
441 attempted to control that distress by managing the situation for their crewmate through intra-
442 dyad support. For instance, Thomas described an event where his partner tried to stop him
443 from experiencing more distress as a result of attending a very difficult callout:

444 He is good at reading me and he has, you know, we went to what was a pretty well
445 confirmed hanging sort of thing and he was like, 'I can leave you, you don't have to
446 come up' to protect me from it. (Thomas)

447 ***Managing Emotions Differently***

448 The participants explained that significant differences existed in the tendency for
449 frontline ambulance service employees to express and regulate their own emotions. These
450 differences can be identified by others and can impact upon the within-dyad authentic
451 emotional communication and the demonstrated EASI model emotional processes.

452 **Regulating Emotions.** Ambulance service personnel described how they differed in
453 their tendency to demonstrate emotional self-regulation and the techniques that they used.
454 Abdul explained, "we all manage situations differently but a part of that is managing your
455 own stresses". A number of the participants described talking out loud as a method of
456 controlling pre-job anxiety and reducing stresses, although they worried that this method may
457 have interpersonal consequences. For instance, Petra explained that when approaching a

458 “worrying” job she will talk through her thoughts while her partner will often want to “sit
459 quietly” and that this difference in approach “probably does annoy” her crewmate.
460 Conversely, George described an instance when “going through all these scenarios in my
461 head and out loud” led his partner to stop him and attempt to calm him down by encouraging
462 a rational psychological approach to the anxieties attributed to the job.

463 Some of the participants discussed emotional self-regulation methods which may
464 reduce instances of interpersonal emotional influence. For example, Andy explained that
465 following a stressful job he would “just take a walk and don't really tend to talk to anybody
466 about it and so I'll just clear my head that way”. This deliberate attempt from Andy to reduce
467 any emotional communication may represent a form of emotional suppression when adopted
468 with relatively unknown crewmates. Nevertheless, Andy also mentioned that his relationship
469 with his regular crewmate was so strong that if he “walked away then yeah, [his crewmate]
470 would know there's something up”. Therefore, Andy’s deliberate attempt to reduce any
471 emotional expression may in fact act as a negative emotional cue when observed by his close
472 crewmate partner.

473 **Outwardly Emotional.** The individual emotional expression tendencies of
474 ambulance personnel were also shown to affect affective reactions and inferential processes.
475 This function was dependent upon the valence of the emotion being expressed, in that
476 positive emotional expression may lead to positive outcomes while negative expression may
477 lead to negative outcomes. Darius explained that some of his colleagues were more
478 emotionally expressive, both verbally and non-verbally, and could be “a natural exuder of
479 positivity”. He also stated that when working with these more emotionally expressive and
480 positive individuals he will often “feed off that and have a more jokey, more of a fun day”. In
481 addition, the degree to which crewmates express their emotion through any means can also
482 affect their partners’ emotional expression. For example, Oliver explained that more

483 “talkative” crewmates and crewmates who were not “reserved” helped to facilitate more in-
484 depth and emotional debriefs following jobs. Similarly, Abdul discussed that during a job
485 which was especially personally emotional, he decided not to verbally share his emotions
486 with his partner because the crewmate was known for his lack of emotional expression:

487 I didn't actually speak to anyone about it and I never have because you gauge it on
488 your crew mate at the time (. . .) He's just not an outwardly emotional chap, he's more
489 of a traditional no emotions bloke. (Abdul)

490 Decisions to not explicitly verbally share emotions with crewmates affect the interpersonal
491 influence that the ambulance service staff's emotions can have on their partner and can limit
492 instances of collective emotion.

493 Nevertheless, participants also discussed scenarios where they understood their
494 partners to be uncontrollably expressing their emotions. This suggests that even those
495 ambulance service staff who think that they suppress or hide their emotions may still
496 implicitly express themselves through non-verbal mechanisms. Hannah described this in her
497 account of her crewmate's emotional expressions:

498 She'll sort of like slam the doors or she'll drop her bags down like really heavy, I
499 sometimes just see her like tutting or like shaking her head, I don't know if she thinks
500 that it's like not something that's like visible or I don't know. (Hannah)

501 *Expectations from Above*

502 The participants described expectations placed upon them by the wider organisation
503 and the job itself as impacting upon their tendency to collectively express and experience
504 interpersonal emotional states.

505 **Promotion of Emotional Communication.** The ambulance service personnel
506 explained that their Trusts had made a conscious shift towards encouraging staff to undertake
507 more open emotional communication. Yolanda explained that, “being in the service for
508 nearly 11 years I have seen a progression of people talking more openly compared to when I

509 first started, it's definitely improving for sure". Other participants described this opportunity
 510 for crewmates to discuss distressing emotions with their peers:

511 I've had a bit of an issue on that job can I have a chat? It's for that side of the
 512 environment [the job] it's fantastic to know that we've got that support from
 513 colleagues, management, all the way up to senior management (Charlie)

514 Oliver further explained how the organisational culture helped to ensure an "ambulance
 515 mentality instilled in us from students all the way into practice, of reflection and sharing"
 516 which leads to emotional discussions becoming "standard practice" for staff.

517 **Leaving it in the Ambulance.** Although honest emotional expression is encouraged
 518 by Ambulance Service Trusts, there are still expectations placed on frontline personnel that
 519 this emotional expression should not impact upon patient care. As a result, emotional labour
 520 and the suppression of undesirable emotional reactions are enacted by many frontline staff in
 521 the presence of patients and, in some cases, colleagues. Abdul explained that in their training
 522 for the role, they were taught that when they are with a patient it "is not your time to cry". In
 523 addition, Hannah stated that, "even if I wasn't feeling my best, I always do my absolute best
 524 to leave it in the ambulance because it's not fair on patients to ever sort of experience our
 525 mixed emotions". It is possible that any suppression of emotional expression around patients
 526 may impact upon the within-dyad emotional influence, however, evidence has been presented
 527 outlining crewmates' coded emotional communication in the presence of patients and the
 528 aptitude that crewmates have for identifying even their partners' shielded emotions.
 529 Therefore, in some instances it may be that the ambulance staff's felt emotion is not
 530 suppressed, yet the expression of that emotion is limited to only the crewmate's attention and
 531 shielded from the patient or relatives. For example, in Darius' voice diary he discussed
 532 suppressing emotion around patients, while still emotionally communicating with his partner:

533 I would never actually show this level of irateness[sic] to a patient, relative, friend or
 534 family and so consequently I did glance at my crewmate and we've actually worked
 535 together a fair bit before so we sort of know how each other works. (Darius)

536 Additionally, the suppression of expression while working with patients or their
537 relatives was also shown to lead to increased outbursts of emotion when solely in the
538 presence of a crewmate. For instance, Andy discussed an upsetting job where the pair “found
539 it very difficult to hide [their] emotion” from the patient. Andy stated that following that job:

540 I had a bit of a chat with my crew mate, she got quite emotional, and you know, I sort
541 of gave her a hug and said look and we just talked about it and that we’d done the best
542 we can for him and yeah, that was really quite emotional. (Andy)

543 A delayed heightened release of emotion following emotional suppression can also be aimed
544 at a crewmate. Elizabeth mentioned a disagreement that she had with her crewmate, although
545 she explained that in a “high pressure situation you do everything first and then you think
546 about it later and then that's when it kind of like, the frustration comes out”. Therefore, the
547 data suggests that emotional labour may impact within-dyad emotional influence in the
548 presence of patients, owing to a reduced emotional expression, although it is unlikely that this
549 effect will have a lasting impact, as normal intra-dyad emotional communication resumes
550 once away from the patients.

551 *Responding to Different Callouts*

552 The frontline ambulance personnel had attended a wide range of callouts during each
553 shift which varied in the level of emergency and the nature of the job. These different callouts
554 can impact the EASI model interpersonal emotional influence experienced by the crewmate
555 pairs because of the differing levels of emotional experiences and expression.

556 **Heightened Emotional Experiences.** The participants described how callouts which
557 are more emotionally challenging or rewarding will often lead to a greater experience of
558 emotion. For instance, Andy explained that, “especially when it comes to paediatrics, myself
559 and a lot of other clinicians get quite anxious”. Some jobs may be more emotionally difficult
560 for only one member of the crew and the participants discussed being able to identify these
561 jobs and respond appropriately to their crewmates’ emotions. John explained in his voice

562 diary that he felt “due to sort of recent events, Ibrahim was probably a little bit more affected
563 by it so to speak, in terms of it's quite a sad situation to see him be in”. In some cases,
564 distressing shifts can create collective within-dyad emotional states which can be difficult to
565 emotionally manage. Petra described attending a difficult job with her crewmate which took
566 “a good couple of hours just to get it out of our system and be able to sort of go on to the next
567 job”. Nevertheless, Ibrahim explained that these collective emotions in stressful times can
568 also help in developing the interpersonal emotional support that the crewmates receive as
569 they are both aware of the emotional situation.

570 When you do more stressful shifts it does make you a little bit more on edge but then
571 as crewmates, you're always aware of that because you know you're working the same
572 shift and you know you're always gonna be tired by the end of it and so I think you're
573 all just supportive of each other. (Ibrahim)

574 **Increased Emotional Expression.** The participants explained that when attending
575 emotionally intense jobs, they often demonstrated increased emotional expression and found
576 it harder to suppress and mask their authentic emotional states. For example, Abdul stated, “if
577 it's a sad situation, and it's an elderly couple been married 60 years and one of them is dying I
578 might struggle to contain my kind of visible emotions”. Similarly, Andy explained that often
579 he will use “high intensity” jobs, such as cardiac arrests, as a benchmark for understanding
580 unfamiliar crewmates’ emotional states and common emotional responses. This is because in
581 these scenarios “the manner they speak to [Andy] or they direct [Andy] to do something” will
582 be more candid and therefore more indicative of their true emotions. The propensity for
583 increased expression at some jobs was also demonstrated in Hannah’s voice diary, where she
584 explained that she was feeling “very anxious” on the job as it was the first time that she had
585 acted on a Do Not Resuscitate order. Hannah suspected that her crewmate could identify this
586 heightened anxiety, she said, “I think Elizabeth knew that I was worried, I was probably a bit
587 flappy [exhibiting stress and panicked behaviour]”. Increased emotional expression can also
588 occur as a result of positive jobs and can further advance collective positive emotions. For

615 related domains (Banerjee & Srivastava, 2019), nevertheless, this exploration represents the
616 first identification of emotional contagion in emergency services dyads. As has also been
617 reflected in the literature (see Barsade et al., 2018), both positive and negative emotions were
618 described by ambulance staff as contagious in nature and eye contact, tone of voice and facial
619 expressions were all identified as expressive mechanisms through which these emotions
620 “travelled”.

621 Also evidenced were Inferential Processes affecting observers’ behavioural changes
622 in response to colleagues’ emotional expressions. First, the participants demonstrated an
623 aptitude for identifying their crewmates’ emotional states through their emotional displays.
624 The ability to identify others’ emotions easily and quickly is a cornerstone of the EASI model
625 (Van Kleef, 2010) and allows, in this instance, for ambulance service personnel to influence
626 and be influenced by their partners’ emotional expressions. The participants also described
627 being able to deliberately convey their emotions non-verbally to their crewmates, which
628 further highlights the capability that crewmates possess in influencing their partners through
629 emotional displays. This non-verbal emotional communication was facilitated through eye
630 contact, facial expressions and behavioural codes. A previous interview study by Drewitz-
631 Chesney (2016) showed that ambulance service pairs may verbally communicate their
632 emotions to each other through open discussions. Nevertheless, the current exploration
633 extends these findings and presents the first acknowledgement that ambulance crewmates can
634 also identify their partners’ deliberate and accidental *non-verbal* emotional expressions too.
635 The benefits of an aptitude for identifying others’ non-verbal emotional cues include
636 speeding up the communication process, developing a shielded interpersonal communication
637 and a better grasp of the emotional state of others (Phutela, 2015). Indeed, the utility of non-
638 verbal emotional communication has been identified within performing domains such as
639 sport (Furley, 2021). Therefore, evidence of these non-verbal identification and

640 communicative processes in the ambulance service suggests the existence of a range of
641 emotionally relevant benefits.

642 A further emotional inferential process that the participants demonstrated was the use
643 of interpersonal emotional regulation. Interpersonal emotional regulation is the use of social
644 processes to manage your own or another's emotional state (Zaki & Williams, 2013).
645 Evidence presented in this exploration acts to support a wealth of literature that demonstrates
646 the presence of interpersonal emotional regulation across multiple performance domains
647 (e.g., Martinez-Inigo et al., 2013; Tamminen & Crocker, 2013). The participants'
648 demonstrated instances of interpersonal emotional regulation spanning the intrinsic/extrinsic
649 and response dependent/independent continuums in the complex processes that Zaki and
650 Williams (2013) have outlined. The specific task of regulating one's emotions in the intense
651 situations that ambulance service personnel work requires a deeper exploration so as to
652 identify additional facilitatory mechanisms.

653 Furthermore, the frontline staff explained that they adopted a collective unspoken
654 process during which the dyad members aimed to mutually regulate the pair's shared
655 emotional state. This process advances beyond interpersonal emotional regulation and is most
656 similar to communal coping, an effort to cope with stressors collectively as a group (Crocker
657 et al., 2015). These findings therefore provide support for previous literature outlining the
658 presence and utility of communal coping in performance contexts (Leprince et al., 2018).
659 When at stressful callouts, dyad members encouraged each other to focus on the specific
660 tasks required and crewmates tried to prolong the dyads' collective positive emotion by
661 joking about collective experiences on shift. These examples consequently indicated evidence
662 that both problem focused and relationship focused communal coping were enacted by the
663 ambulance staff (Leprince et al., 2018). Future researchers could explore the utility of these

664 communal coping approaches in different scenarios and the mechanisms through which dyad
665 members choose a method to adopt.

666 Using retroductive analysis methods, four overarching themes were identified which
667 facilitated the EASI model processes in the context of ambulance service pair relationships.
668 These facilitative factors included understanding each other, managing emotions differently,
669 expectations from above and responding to different callouts. Previous studies have also
670 identified the impact that social relationships can have on encouraging emotionally influential
671 social processes related to EASI model concepts. For instance, Tamminen and Crocker
672 (2013) found that the length of time that a sports team had spent together impacted the
673 comfort with which teammates demonstrated interpersonal emotional regulation. Similarly,
674 Drewitz-Chesney (2016) found that verbal expressions of emotion, which, owing to the
675 current study, can now be recognised as leading to interpersonal influence, were more
676 common for paramedic teams that had spent more time together and that trusted each other.
677 The results showed that good dyadic relationships not only encouraged emotional expression,
678 but also meant that crewmates were more adept at identifying crewmate emotion, more likely
679 to experience emotional contagion, and more likely to undertake interpersonal emotional
680 regulation. Provided that the interpersonal emotional influence is positive, these findings
681 indicate that it is important that specific crewmates are regularly crewed together and that the
682 within-dyad relationship is amicable.

683 In this study it was also found that individual differences in both the emotional
684 expression tendencies and the emotional regulation techniques of the ambulance service
685 personnel impacted the susceptibility for crewmates to experience interpersonal emotional
686 influence such as emotional contagion. Indeed, personal characteristics such as an
687 individual's affective presence, the tendency for communicators to make observers feel
688 similarly positive or negative, has previously been linked with interpersonal emotional

689 concepts such as emotional contagion (Madrid et al., 2016). Similarly, with a focus on sport,
690 Crocker et al. (2015) explained that both inter and intra-individual differences in coping and
691 emotional regulation techniques are likely to explain why coping can lead to better
692 psychological, emotional and functional outcomes for some individuals in some social
693 scenarios and not others. Individual differences in key psychological concepts such as
694 emotional intelligence and resilience have also been found to be important in paramedic
695 practice (Bennett et al., 2020) and may affect interpersonal emotional regulation strategies
696 (Campo et al., 2017). As a result, there exists the opportunity for potential future research to
697 investigate whether individual characteristics and management techniques may affect the
698 tendency and strength of interpersonal emotional influence in performance domains.

699 In addition, the organisational expectations placed upon frontline ambulance service
700 employees were found to act as facilitators for the EASI model interpersonal emotional
701 processes. There has been a marked change within the ambulance service in recent years
702 towards the promotion of emotional expression and open communication within crewmate
703 pairs and wider workplace relationships (Association of Ambulance Chief Executives, 2018).
704 As a result, ambulance service employees are more aware of their crewmates' frequent
705 emotions in specific situations and they can therefore identify, influence and be influenced by
706 these emotional displays. Additional researchers have highlighted this cultural change within
707 the ambulance service and honest emotional communication is expected to continue to
708 improve (Clark et al., 2021). The participants in the current study described an expectation
709 that patient facing staff demonstrate emotional control and aim to reduce any negative
710 emotional expression when working with patients. These expectations promote emotional
711 labour, the process where authentic emotions are managed or suppressed for the sake of an
712 individual's job (Martinez-Inigo et al., 2007), which can be detrimental to performance and
713 emotional wellbeing in organisational contexts (Badolamenti et al., 2017). Interestingly,

714 despite previous researchers presenting evidence that the suppression of emotional expression
715 leads to a reduced interpersonal emotional influence by emotional contagion (Liu et al.,
716 2019), this was not the case for the frontline staff sampled in the current context. Instead,
717 crewmates still influenced their partners in the presence of patients through coded emotional
718 communication and uncontrollable emotional displays. Periods of emotional suppression
719 towards patients were also often followed by outbursts of emotional expression when
720 crewmates were later alone with each other. These outbursts were found to subsequently
721 facilitate further interpersonal emotional influence. The findings therefore advance the
722 literature and can be interpreted to suggest that although relevant in the patient/clinician
723 relationship (Williams, 2013), emotional labour may not act to reduce within-dyad
724 interpersonal emotional processes in ambulance crewmate relationships.

725 While unique to this field, there were limitations to the employed methods in this
726 exploration. For instance, the participants were asked to discuss two events in their voice
727 diaries which were particularly emotionally stimulating during their shift. This led the
728 participants to focus on emotionally intense situations. However, the interviews additionally
729 highlighted the interpersonal impact that staff members had on their crewmates' emotional
730 states through their emotional responses to smaller events such as interactions with other road
731 users. As such, a more general, full shift voice diary which encourage the participants to
732 outline anything emotionally relevant across the whole shift may have aided participants to
733 discuss further evidence of EASI model processes.

734 This study was completed in collaboration with three UK ambulance service trusts in
735 order to ensure that the practical utility of the project was enhanced (Ronkainen & Wiltshire,
736 2021). Firstly, the study provides evidence to trust managements and frontline staff of the
737 interpersonal risk that negative emotional expressions may have and the beneficial effects of
738 positive emotional displays when working in teams. This suggests that crewmates should

739 attempt to adopt emotional regulation techniques to manage negative emotion in an adaptive
740 manner and promote positive emotions in their pairs. Similarly, the tendency for these
741 positive or negative emotional states to influence a partner's affect, cognition or behaviour
742 was affected by the identified facilitative themes. Therefore, the results from this study
743 provide applied professionals with a set of facilitative mechanisms that can be referred to if
744 aiming to increase or decrease the within-dyad emotional influence experienced by pairs,
745 dependent on the emotional valence of the specific crewmates. The promotion of positive
746 interpersonal emotional influence can be achieved through pairing amicable crewmates
747 together, encouraging positive emotional expression at an individual and organisational level,
748 and paying additional attention to frontline staff members' emotions during difficult callouts.
749 Similarly, the results of the current exploration suggest that ambulance service trusts may
750 wish to consider the individual differences of staff member's responses to emotional
751 scenarios during any training and post-callout support provision. These considerations may
752 help to ensure that positive emotional environments are established in order to avoid the
753 development of negative group affective states (Martinez-Inigo et al., 2007), improve
754 performance (Regehr & Le Blanc, 2017) and increase psychological wellbeing (Lawn et al.,
755 2020). Consequently, these findings provide beneficial implications for the ambulance
756 service in understanding how best to encourage positive interpersonal emotional experiences
757 for their crew members.

References

- 758
759 Archer, M. (1998). Realism and Morphogenesis. In M. Archer, R. Bhaskar, A. Collier, T.
760 Lawson & A. Norrie (Eds), *Critical Realism: Essential Readings* (pp. 135-162).
761 Routledge.
- 762 Association of Ambulance Chief Executives, (2018). Association of Ambulance Chief
763 Executives (AACE) Employee Mental Health Strategy Guidance, London, UK.
- 764 Avraham, N., Goldblatt, H., & Yafe, E. (2014). Paramedics' experiences and coping
765 strategies when encountering critical incidents. *Qualitative Health Research*, 24(2),
766 194-208. <https://doi.org/10.1177/1049732313519867>
- 767 Badolamenti, S., Sili, A., Caruso, R., & Fida, R. What do we know about emotional labour in
768 nursing? A narrative review. *British Journal of Nursing*, 26(1), 48-55.
769 <https://doi.org/10.12968/bjon.2017.26.1.48>
- 770 Banerjee, P & Srivastava, M. (2019). A review of emotional contagion: Research
771 propositions. *Journal of Management Research*, 19(4), 250-266.
- 772 Barsade, S.G., Coutifaris, C., & Pillemer, J. (2018). Emotional contagion in organizational
773 life. *Research in Organisational Behaviour*, 38, 137-151.
774 <https://doi.org/10.1016/j.riob.2018.11.005>
- 775 Bennett, R., Mehmed, N., & Williams, B. (2020). Non-technical skills in paramedicine: A
776 scoping review. *Nursing and Health Sciences*, 23(1), 40-52.
777 <https://doi.org/10.1111/nhs.12765>
- 778 Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long,
779 A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods*
780 *in psychology Vol. 2. Research designs: Quantitative, qualitative,*
781 *neuropsychological, and biological* (pp. 57–71). American Psychological
782 Association. <https://doi.org/10.1037/13620-004>

- 783 Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative*
784 *Research in Sport, Exercise and Health*, 11(4), 589-597.
785 <https://doi.org/10.1080/2159676X.2019.1628806>
- 786 Braunstein, L. M., Gross, J., & Ochsner, K. N. (2017). Explicit and implicit emotional
787 regulation: A multi-level framework. *Social Cognitive and Affective Neuroscience*,
788 12(10), 1545-1557. <https://doi.org/10.1093/scan/nsx096>
- 789 Brewis, J., & Godfrey, R. (2019). From the extreme to mundane? The changing face of
790 paramedicine in the UK ambulance service. In P. Wankhade, L. McCann & P.
791 Murphy (Eds.), *Critical Perspectives on the Management and Organization of*
792 *Emergency Services* (pp. 179-199). Routledge.
- 793 Campo, M., Sanchez, X., Ferrand, C., Rosnet, E., Friesen, A., & Lane, A.M. (2017).
794 Interpersonal emotional regulation in team sport: Mechanisms and reasons to regulate
795 teammates' emotions examined. *International Journal of Sport and Exercise*
796 *Psychology*, 15(4), 379-394. <https://doi.org/10.1080/1612197X.2015.1114501>
- 797 Clark, L.V., Fida, R., Skinner, J., Murdoch, J., Rees, N., Williams, J., Foster, T., &
798 Sanderson, K. (2021). Mental health, well-being and support interventions for UK
799 ambulance services staff: An evidence map, 2000 to 2020. *British Paramedic Journal*,
800 5(4), 25-39. <https://doi.org/10.29045/14784726.2021.3.5.4.25>
- 801 Clompus, S.R., & Albarran, J.W. (2016). Exploring the nature of resilience in paramedic
802 practice: A psycho-social study. *International Emergency Nursing*, 28, 1-7.
803 <https://doi.org/10.1016/j.ienj.2015.11.006>
- 804 Crocker, P.R.E., Tamminen, K. A., & Gaudreau, P. (2015). Coping in sport. In S. Hanton &
805 S. Mellalieu (Eds.), *Contemporary advances in sport psychology: A review* (pp.28-
806 67). Routledge.

- 807 Drewitz-Chesney, C., (2019). Exploring paramedic communication and emotional expression
808 in the workplace after responding to emergency calls. *Australasian Journal of*
809 *Paramedicine*, 16, 160-171. <https://doi.org/10.33151/ajp.16.714>.
- 810 Filstad, C. (2010). Learning to be a competent paramedic: Emotional management in
811 emotional work. *International Journal of Work, Organisation and Emotion*, 3(4), 368-
812 383. <https://doi.org/10.1504/IJWOE.2010.035325>
- 813 Friesen, A.P., Wolf, S.A., & Van Kleef, G.A. (2020). The social influence of emotions in
814 sports teams. In M.C. Ruiz & C. Robazza (Eds.), *Feelings in Sport* (pp. 47-56).
815 Routledge. <https://doi.org/10.4324/9781003052012>
- 816 Furley, P. (2021). The nature and culture of nonverbal behaviour in sports: Theory,
817 methodology, and a review of the literature. *International Review of Sport and*
818 *Exercise Psychology*. <https://doi.org/10.1080/1750984X.2021.1894594>
- 819 Granter, E., Wankhade, P., McCann, L., Hassard, J., & Hyde, P. (2019). Multiple dimensions
820 of work intensity: Ambulance work as edgework. *Work, Employment and Society*,
821 33(2), 280-197. <https://doi.org/10.1177/0950017018759207>
- 822 Harré, R. (2013). Approaches to realism basic features of scientific realism. *Studia*
823 *Philosophica Estonica*, 5, 23–35. <https://doi.org/10.12697/spe.2012.5.2.03>
- 824 Hatfield, E., Bensman, L., Thornton, P., & Rapson, R. (2014). New perspectives on
825 emotional contagion: A review of classic and recent research on facial mimicry and
826 contagion. *Interpersona*, 8(2), 159-179. <https://doi.org/10.5964/ijpr.v8i2.162>
- 827 Hatfield, E., Cacioppo, J., & Rapson, R. (1994). *Emotional Contagion*. Cambridge University
828 Press. <https://doi.org/10.1111/1467-8721.ep10770953>
- 829 Hu, X. (2018). Methodological implications of critical realism for entrepreneurship research.
830 *Journal of Critical Realism*, 17(2), 118-139.
831 <https://doi.org/10.1080/14767430.2018.1454705>

- 832 Lawn, S., Roberts, L., Willis, E., Couzner, L., Mohammadi, L., & Goble, E. (2020). The
833 effects of emergency medical service work on the psychological, physical, and social
834 well-being of ambulance personnel: A systematic review of qualitative
835 research. *BMC Psychiatry*, 20, 348. <https://doi.org/10.1186/s12888-020-02752-4>
- 836 Leprince, C., D'Arripe-Longueville, F., & Doron, J. (2018). Coping in teams: Exploring
837 athletes' communal coping strategies to deal with shared stressors. *Movement Science
838 and Sport Psychology*. <https://doi.org/10.3389/fpsyg.2018.01908>
- 839 Liu, X-Y., Chi, N-W., & Gremler, D. (2019). Emotion cycles in services: Emotional
840 contagion and emotional labor effects. *Journal of Service Research*, 22(3), 285-300.
841 <https://doi.org/10.1177/1094670519835309>
- 842 Lowery, K., & Stokes, M.A. (2005). Role of peer support and emotional expression on
843 posttraumatic stress disorder in student paramedics. *Journal of Traumatic Stress*,
844 18(2), 171-179. <https://doi.org/10.1002/jts.20016>
- 845 Madrid, H. P., Totterdell, P., Niven, K., & Barros, E. (2016). Leader affective presence and
846 innovation in teams. *Journal of Applied Psychology*, 101, 673–686.
- 847 Martínez-Íñigo, D., Poerio, G.L., & Totterdell, P. (2013). The association between controlled
848 interpersonal affect regulation and resource depletion. *Applied Psychology: Health
849 and Well-Being*, 5(2), 248-69. <https://doi.org/10.1111/aphw.12009>.
- 850 Martinez-Inigo, D., Totterdell, P., Alcover, C. M., & Holman, D. (2007). Emotional labour
851 and emotional exhaustion: Interpersonal and intrapersonal mechanisms. *Work &
852 Stress*, 21(1), 30-47. <https://doi.org/10.1080/02678370701234274>
- 853 Meyer, S.B., & Lunnay, B. (2013). The application of abductive and retroductive inference
854 for the design and analysis of theory-driven sociological research. *Sociological
855 Research Online*, 18(1), 86-96. <https://doi.org/10.5153/sro.2819>

- 856 Mildenhall, J. (2012). Occupational stress, paramedic informal coping strategies: A review of
857 the literature. *Journal of Paramedic Practice*, 4(6), 318-328.
858 <https://doi.org/10.12968/jpar.2012.4.6.318>
- 859 Patterson, D., Weaver, M.D., & Hostler, D. (2017). Teams and teamwork in emergency
860 medical services. In J. Keebler, E. Lazzara & P. Misasi (Eds.) *Human Factors and*
861 *Ergonomics of Prehospital Emergency Care* (pp 95-109). CRC Press.
- 862 Petitta, L., Jiang, L., & Hartel, C.E.J. (2017). Emotional contagion and burnout among nurses
863 and doctors: Do joy and anger from difference sources of stakeholders matter? *Stress*
864 *and Health*, 33(4), 358-369. <https://doi.org/10.1002/smi.2724>
- 865 Phutela, D. (2016). The importance of non-verbal communication. *The IUP Journal of Soft*
866 *Skills*, 4(4), 43-49.
- 867 Regehr, C., & LeBlance, V. R. (2017). PTSD, acute stress, performance and decision making
868 in emergency service workers. *Journal of the American Academy of Psychiatry and*
869 *the Law*, 45, 184-192.
- 870 Ritz, B. (2020). Comparing abduction and retroduction in Peircean pragmatism and critical
871 realism. *Journal of Critical Realism*, 19(5), 456-465.
872 <https://doi.org/10.1080/14767430.2020.1831817>
- 873 Ronkainen, N.J., & Wiltshire, G. (2021). Rethinking validity in qualitative sport and exercise
874 psychology research: A realist perspective. *International Journal of Sport and*
875 *Exercise Psychology*, 19(1), 13-28. <https://doi.org/10.1080/1612197X.2019.1637363>
- 876 Tamminen, K.A., & Crocker, P.R.E. (2013). "I control my emotions for the sake of the
877 team": Emotional self-regulation and interpersonal emotional regulation among
878 female high-performance curlers. *Psychology of Sport and Exercise*, 14(5), 737-747.
879 <https://doi.org/10.1016/j.psychsport.2013.05.002>

- 880 Treffers, T., & Putora, P.M. (2020). Emotions as social information in shared decision
881 making in oncology. *Oncology and Informatics Review*, 98, 430-437.
882 <https://doi.org/10.1159/000505341>
- 883 Van Gelderen, B.R., Konijn, E.A., & Bakker, A.B. (2011). Emotional labor among trainee
884 police officers: The interpersonal role of positive emotions. *The Journal of Positive*
885 *Psychology*, 6(2), 163-172. <https://doi.org/10.1080/17439760.2011.558849>
- 886 Van Kleef, G. A. (2009). How emotions regulate social life: The emotions as social
887 information (EASI) model. *Current Directions in Psychological Science*, 18, 184-188.
888 <https://doi.org/10.1111/j.1467-8721.2009.01633.x>
- 889 Van Kleef, G. A. (2010). The emerging view of emotion as social information. *Social and*
890 *Personality Compass*, 4(5), 331-343. [https://doi.org/10.1111/j.1751-](https://doi.org/10.1111/j.1751-9004.2010.00262.x)
891 [9004.2010.00262.x](https://doi.org/10.1111/j.1751-9004.2010.00262.x)
- 892 Wagstaff, C.R.D., & Weston, N.J.V. (2014). Examining emotion regulation in an isolated
893 performance team in Antarctica. *Sport, Exercise and Performance Psychology*, 3(4),
894 273-287. <https://doi.org/10.1037/spy0000022>
- 895 Warren-James, M., Dodd, J., Perera, C., Clegg, L., & Stallman, H. M. (2022). How do
896 paramedics cope? A scoping review. *Australasian Emergency Care*.
897 <https://doi.org/10.1016/j.auec.2021.12.003>
- 898 Williams, A. (2013). The strategies used to deal with emotion work in student paramedic
899 practice. *Nurse Education in Practice*, 13, 207-212.
- 900 Wiltshire, G. (2018). A case for critical realism in the pursuit of interdisciplinarity and
901 impact. *Qualitative Research in Sport, Exercise and Health*, 10(5), 525-542.
902 <https://doi.org/10.1080/2159676X.2018.1467482>
- 903 Zaki, J., & Williams, W.C. (2013). Interpersonal emotion regulation. *Emotion*, 13(5), 803-
904 810. <https://doi.org/10.1037/a003338>