

# Factors Influencing Successful Coping among Crime Scene Investigation (CSI) Personnel: Recruiting for Resilience - A Mixed Methods Study

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## Research Article

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# Abstract

Successful coping is important for staff wellbeing, retention and reducing absenteeism, especially for those employed in high emotional labour jobs such as crime scene investigation (CSI). Antecedents of successful coping can include self-efficacy, locus of control, optimism, resilience, and self-esteem. However, a dearth of literature exists attaining to the importance of emotion-regulation and mindfulness for successful coping in these roles, despite evidence revealing both are conducive to better wellbeing. Additionally, few studies with CSI personnel have employed a mixed-methods approach, which enables exploration of lived experiences. Here, we recruited 84 CSI employees and 88 students undertaking a degree enabling employment within CSI, to comprehensively explore factors predicting successful coping. 75 CSI employees and 88 students took part in the quantitative aspect, where questionnaire data pertaining to the above wellbeing factors, as well as depression, anxiety and stress, were collected. Nine CSI employees took part in the qualitative aspect. This included deeper exploration of resilience and coping, including how CSI personnel manage their occupation. Quantitative analyses revealed that, for CSI personnel, the greatest predictors of successful coping were resilience and emotional regulation. Compared to students, CSI personnel further reported greater self-esteem, optimism, coping self-efficacy, mindfulness and resilience; and fewer difficulties in emotion regulation, depression, anxiety and stress. Qualitative analyses also revealed resilience/emotion-regulation to be key coping factors; but additionally, that finding meaning in work/collegiate support enabled successful coping. Potential implications of findings are discussed and include pre-employment screening for emotion regulation and resilience, and inclusion of such in CSI training/CPD curricula.

# Introduction

Staff well-being, retention and absenteeism are considered a significant concern of organisations, yet research suggests that individual coping may also play a considerable role in these (Ferreira, 2012; Jeanguenat & Dror, 2018; Lorenz et al., 2016). A prevalent area of research in this field concerns employee wellbeing in 'high emotional labour' jobs (roles requiring significant emotional management), where successful coping is both essential and seriously tested (Janssens et al., 2018). Here, crime scene investigation (CSI) is considered one of the most demanding professions - or high emotional labour roles - given that it involves being exposed to relentless, deeply harrowing experiences requiring considerable coping to protect personal wellbeing (Mrevlje, 2016; Salinas & Webb, 2018). As such, a focus of previous research has been to predict and screen for personality factors to support wellbeing in this profession (Kelty, 2011; Kelty & Gordon, 2012). Despite this, much of the coping literature, particularly within CSI, focuses on burnout and maladaptive coping (Janssens et al. 2018), with limited research exploring proactive approaches to wellbeing; i.e., successful coping.

Antecedents that underlie successful coping behaviours include self-efficacy, internal locus of control, trust, mastery, optimism and self-esteem (Lazarus & Folkman, 1987; Quick & Cooper, 2017). Quick & Cooper (2017) argue that a combination of these antecedents manifest in a coping style which can be problem-, emotion-, meaning- or avoidance- focussed, with success dependent on their relevant use. For

example, better coping has been attributed to higher levels of optimism, which encourages attempts at: problem focussed coping - such as decision making; emotion focussed coping - such as support-seeking or humour (Sahler & Carr, 2009; Vivona, 2014); or meaning focussed coping - such as reframing (Kelty & Gordon, 2015). These are considered active coping strategies; i.e., efforts that enable successful adaptation following a taxing demand that exceeds current resources (Quick & Cooper, 2017; Chowdhury, 2020). An active coping style is therefore argued to be a useful predictor of successful coping. Indeed, a recent study among crime scene investigators (CSIs) in the US indicated that the most frequently used successful coping techniques included acceptance, active coping and planning (Salinas & Webb, 2018).

Mrevlje (2016) investigated the effects of coping style on post-traumatic stress disorder (PTSD) in 75 male Slovenian CSIs. They found that experience (familiarity with a situation rather than years of service), time to plan and previous success in the role enabled approach style or 'active' coping. However, Mrevlje (2016), further found that avoidance style coping was most frequently used, manifesting in negative behaviours. In fact, PTSD symptoms among the CSIs (17.19%) were higher than in the general population (1.7%), and higher PTSD correlated with higher avoidance style coping, as purported in other CSI studies (Clark et al., 2015; Sollie et al., 2017). This suggests that trauma from the role can affect coping outcomes in CSIs, supporting the need to more fully understand the antecedents of successful coping. These include 'hardiness', 'psychological capital' and 'resilience' (see Lorenz et al., 2016; Janssens et al., 2018; Maran et al., 2020; Queiros et al., 2020).

According to Janssens et al. (2018), hardiness is a construct that relates to an individual's ability to change events around them into something meaningful that they can control, relate to, adapt to and grow from. The relationship between hardiness and stress has been shown to be weak to moderate (Janssens et al., 2018); yet it has been found to aid resistance to stress and act as a predictor of burnout in the wider literature and high emotional labour roles such as police work (Garrosa et al., 2010; Kobasa et al., 1982; Talavera-Velasco et al., 2018). Whilst hardiness appears to align well with an active coping style, its defining element is perceived locus of control (Kobasa et al., 1979). The construct of locus of control (LOC; Rotter, 1966) can be internal (self-led) or external (led by other forces). When an individual perceives they have control over events surrounding them this has been associated with feelings of personal competence and greater focus (Georgescu et al., 2019). An internal LOC has further been related to greater wellbeing and reduced absenteeism in high stress work environments (Wang et al., 2010). Moreover, when individuals perceive some form of control over a situation or event, then enhanced successful coping is observed (Groth et al., 2019). In direct application to CSI, enabling self-selection of crime cases has been recommended to support coping within CSIs (Sollie et al., 2017), and a high internal LOC is postulated to moderate the effects of stress and trauma (Clark et al., 2015). However, a recent cross-sectional police study by Talavera-Velasco et al. (2018) does not support LOC as being positively related to wellbeing. They investigated psychosocial risk factors, burnout and hardiness as predictors of mental health among 223 police personnel. There was a significant negative relationship between problem perception, emotional exhaustion and poor mental health, yet the LOC element of 'control over work', did not predict psychological health. Thus, this is an area that requires further research.

Psychological capital (Psycap), described as the positive mental state of an individual's development (Lorenz et al., 2016), is strongly rooted in positive psychology. It is comprised of measures of self-efficacy, optimism and resilience, as well as hope (Luthans et al., 2008). Police officers who have high levels of these constructs have been found to be less vulnerable to anxiety, somatic symptoms, social dysfunction and depression (Ojedokun & Balogun, 2015). As a single measure, self-efficacy is shown to be key within CSIs, with high levels of self-efficacy enabling more successful coping (Kelty, 2011; Kelty & Gordon 2012, 2015). According to Bandura (1997), self-efficacy reflects one's perceived ability to carry out a required act in a prospective situation. Bandura defined it as a mix of competence and confidence that plays an important role in individuals' approaches to new behaviours when dealing with problems and pursuing goals.

Optimism, as a single measure, has also been found in police studies to be integral to coping, by reducing psychological distress (de Terte et al., 2014). Optimism can broadly be defined as either: 'dispositional' (trait-like), with the belief that a positive outcome will occur (Scheier & Carver, 2018); or 'explanatory' (state-like), with a positive explanatory style evolving over time (Seligman, 2011). Dispositional optimism has consistently been shown to positively correlate with psychological wellbeing (Augusto-Landa et al., 2011) and is additionally recognised as a predictive factor of resilience among medical students (Souri & Hasanirad, 2011).

Resilience has been defined in different ways, it is generally perceived as the ability to 'bounce back' following challenges (Windle, 2010; Janssens et al., 2018; Van-der-Meulen et al., 2019). Aside from optimism, further factors predictive of resilience include good intellectual functioning, self-regulation, self-esteem and altruism (Charney, 2004). Together, these tend toward a 'positive response' or optimistic outlook to adversity, enabling self-efficacy/resilience to continue to operate in times of stress (Windle, 2010). Self-esteem is generally accepted as the confidence we place on our own worth or ability, and has a strong relationship with happiness (Rosenberg, 1965). It is also a further antecedent to a positive outlook, optimism and hope (i.e., resilience), and a buffer to stress (Baumeister et al., 2003; Prati & Pietrantonio, 2010). Increased levels of self-esteem have been found to increase levels of resilience and vice versa (Mehta et al., 2019). In police personnel, this includes supporting wellbeing through a propensity for positive reframing, directly strengthening self-efficacy and active coping (Prati & Pietrantonio, 2010). Resilience has many beneficial facets, it independently predicts successful coping (Windle et al., 2011) and has been of interest to researchers in the field of CSI. For example, high levels of resilience have been shown to reduce the frequency and intensity of PTSD among CSIs whereas high levels of PTSD correlated with lower resilience and maladaptive coping (Rosansky et al., 2019). Further studies in resilience and coping research have been conducted to understand the consequences of traumatic events on resilience. For example, Park et al. (2018) found a significant negative effect on resilience in relation to traumatic events and an indirect effect via social support and coping self-efficacy. The authors concluded that interventions to support coping self-efficacy that included social support are crucial to support resilience and future psychological wellbeing.

The importance of resilience to successful coping within CSI, however, has been most markedly demonstrated in a series of studies by Kelty (2011) and Kelty & Gordon (2012, 2015). They investigated the performance of CSIs in Australia and used psychometric testing to explore the concept of hiring well to promote wellbeing and reduce absenteeism. Their research included tests for cognitive abilities, emotional intelligence and problem solving, plus measures for stress symptoms, resilience and self-efficacy. Using this test battery, alongside interviews, Kelty & Gordon (2015) investigated the performance of 19 male and female top performing CSIs, as compared with normative data from university students, police recruits, police officers, clinical outpatients and members of the general population. They found the top level CSIs showed: significantly higher levels of critical thinking compared to police officers and the general population; similar stress resilience levels to the general population (although significantly higher resilience than clinical outpatients); significantly lower levels of depression than the general population (that was on a par with police officers); significantly lower anxiety than the general population and police officers; and, significantly elevated self-efficacy compared with the general population and police recruits. Additionally, in comparison with the general population, the top performing CSIs had significantly higher self-perceptions, were able to mentally detach from interfering thoughts whilst at work, had an active coping style and maintained focus on tasks with an optimistic outlook. Thus, Kelty & Gordon (2015) concluded that there are measurable and assessable attributes possessed by highly performing CSIs that can be selected for. Their research further highlighted that successful CSIs were able to recognise and understand their emotions, express themselves efficiently, solve problems despite the emotional circumstances of their employment and resist impulses. This suggests the added importance of investigating emotion regulation within CSI. In support of this, Rosansky et al. (2019) reported that CSIs frequently cope with stress by doing what has to be done, learning to live with the stress, trying to learn from their experience, and accepting what has happened.

Whilst the above review reveals personality factors, resilience and emotion regulation to positively influence coping, more recent research on successful coping has widened to include mindfulness (Christopher et al., 2016; Fitzhugh et al., 2019; Wang & Kong, 2019; Tweedy, 2020). Mindfulness is considered as *'paying attention on purpose, in the present moment, non-judgmentally'* (Kabat-Zinn, 1994, p.4), thereby enabling improved emotion regulation, perspective and a greater clarity of thought and action (Jeanguenat & Dror, 2018). These are demonstrated as important factors within CSI (Kelty & Gordon, 2015; Roach et al., 2017), yet mindfulness remains relatively unexplored within this field. Mindfulness interventions in high emotional labour roles have resulted in improvements in resilience and lowered burnout levels (Christopher et al., 2016); increased resilience, locus of control and wellbeing (Fitzhugh et al., 2019); increased inter-personal reflection and improved emotional functioning (Eddy et al., 2019; Eddy et al., 2021); reduced stress, burnout, avoidant coping and increased self-efficacy (Tweedy, 2020). All of these are important indicators of successful coping in CSIs (Kelty & Gordon, 2015) and, as such, mindfulness could provide a useful profiling tool for use within CSI selection.

Finally, although Kelty & Gordon (2015) employed interviews as part of their research strategy, qualitative research within the CSI and coping literature is rare. Sollie et al. (2017) used observational analysis - embedding a researcher within a CSI team - to understand the environmental and operational context of

their thirty participants. Of these, six reported they had previously suffered with 'burnout'. They concluded that sharing emotions, strict management of thoughts and visualisation could help CSIs overcome workplace stress. The report highlighted the need for investment by forces in organisational resources to support these strategies.

In summary, the research of Kelty and colleagues (2011; 2012; 2015), Sollie et al. (2017) and Rosansky et al. (2019) reveals that successful coping, within CSIs, is greatest for those who effectively manage their thoughts, focus on sense-making, effectively share their emotions and have control over their responsibilities. Additionally, the above literature highlights a variety of factors that might contribute to successful coping in high emotional-labour jobs including vulnerability to stress, locus of control, optimism, self-esteem, self-efficacy, resilience, emotion regulation and mindfulness. Yet, in no single study have these factors been explored in combination. Moreover, little research to date has explored the lived experience of CSIs; that is, how they manage their roles, build resilience and handle exposure to trauma and make sense of these in their own words. Thus, the purposes of this study were twofold: a) to explore the extent to which LOC, optimism, self-esteem, resilience, emotion regulation and mindfulness, as well as depression, anxiety and stress, predict successful coping in current and future CSI personnel; and b) to explore, through qualitative analyses, current CSIs' understanding of personal resilience and factors that have supported and hindered their ability to perform their job roles. To this end, a mixed methods approach was taken with both positive and negative attributes of coping included to explore factors influencing successful coping among CSI Personnel; and as compared to future CSI personnel.

## **Methods**

### **Design**

The first element of the study (the online survey) comprised of an online questionnaire of 7 psychometric scales. The second element involved 9 in-depth interviews with CSIs. The two elements ran simultaneously, one did not inform the other. Ethical clearance was gained for both the online and interview elements of the study via the relevant University ethics sub-panel (Human Sciences). Data clearance was obtained for CSIs from the regional Chief Commissioner.

### **Participants**

For the online survey, two groups of participants were recruited, professional CSI personnel and students in training to be in CSI roles.

#### **Professional CSIs**

Participants were recruited from UK CSI and Special Operations Units either directly via the Constabulary Manager or via The Chartered Society of Forensic Sciences Monthly Bulletin, UK (n =115). Demographic data for the 75 CSIs who completed the survey in full is overviewed in Table 1.

Table 1  
*Demographics of CSI personnel participants in the study (≈ = mean).*

Age in years (average)	Gender (%)	Ethnicity (%)	CSI level (1 to 4)	Length in role (average)	Length in CSI (average)	No. of cases (average)	No. 2019 absences (average)
23 – 65 (≈33.36)	Female 40 (53%)	Mixed 1(1%)	Level 1 15 (20%)	1 month – 35 years (≈ 10.4)	1 month – 35 years (≈14.1)	0 – 40,000 (≈ 3,341.3)	0 – 65 (≈ 4.6)
	Male 35 (47%)	White British 68 (91%)	Level 2 27 (36%)				
		White Scottish 3 (4%)	Level 3 11 (15%)				
		White Irish 1 (1%)	Level 4 8 (11%)				
		White European 2 (3%)	Other 14 (19%)				

## Student CSIs

To understand attributes of well-performing CSIs, a normative sample of students wishing to progress careers in this general field was also recruited. These were students recruited from Forensic Science Programmes across 5 UK Universities. All participants were aged 18 or over. Demographic data for the 88 student participants who completed the survey in full is overviewed in Table 2.

Table 2  
*Demographics of CSI student participants in the study*

Age range (years)	Gender	Ethnicity	Degree	Year of study
18-46 ( $\approx$ 22.9)	Female	White British 76 (86%)	MSc	0 = 3 (3%)
		Mixed British 1 (1%)	2 (2%)	1 = 31 (35%)
	Male	Pakistani British 1 (1%)	BSc	2 = 27 (31%)
		Asian 1 (1%)	86 (98%)	3 = 24 (27%)
		Black Arab 1 (1%)		4 = 3 (3%)
		European 5 (6%)		
		Greek 1 (1%)		
		Mixed 1 (1%)		
		White Latin 1 (1%)		

## Interviews

For the interviews, participants were recruited from UK regional constabulary Forensic Investigation Units. From the 24 people invited to take part, 9 consented (6 males, 3 females). They ranged in age from 24 to 52 and had an average of 15 years' experience working within a Forensic Investigation Unit.

## Measures and Materials

### Online Survey Materials

#### Brief Resilience Scale (BRS; Smith et al., 2008)

The BRS is supported by Windle et al. (2011) as a highly valid and reliable measure of trait resilience (Cronbach's  $\alpha$  score of 0.91) providing a good indication of an individual's capability to 'bounce back' from challenges. The BRS is a 6-item scale (Smith et al., 2008). Example items include "it does not take me long to recover from a stressful event". It is rated on a 5-point Likert scale from 1 = strongly disagree to 5 = strongly agree, with items summed and averaged to create a total score, whereby higher scores indicate greater resilience e.g., 1.00-2.99 reflects low resilience, 3.00-4.30 reflects normal resilience and 4.31-5.00 reflects high resilience (Smith et al., 2013). The BRS has been used in recent studies within police research in relation to wellbeing and mindfulness (Christopher et al., 2016; Fitzhugh et al., 2019).

#### Coping Self-efficacy Scale (CSE-13; Chesney et al., 2006)

The CSE-13 is a short form of the 26-item coping self-efficacy measure. It provides a measure of self-efficacy (or confidence) in performing coping behaviours in the face of adversity (Chesney et al., 2006). It has 13 items and example items include “When things aren’t going well for you, or when you’re having problems, how confident or certain are you that you can break an upsetting problem down into smaller parts?”. It has anchor points on an 11-point Likert scale from 0 = can’t do at all, to 10 = certain can do, with scores ranging between 0 and 130, whereby high scores indicate higher coping self-efficacy. The CSE has been used within previous police coping research (e.g., Park et al., 2018; Kelty & Gordon, 2015) with a Cronbach’s  $\alpha$  score of 0.8- 0.91.

## **Depression, Anxiety and Stress Scale (DASS-21/DASS-42; Lovibond & Lovibond, 1995)**

The DASS-21 is a shortened measure of the DASS-42. It provides a measure to understand current levels of personal distress. It has 21 items with participants asked to indicate which score best applied to them over the past week for each statement, e.g. “I felt downhearted and blue”. Items are rated on a 4-point Likert scale to assess participant reactions from 0 = did not apply to me at all, to 3 = applied to me very much or most of the time. Scores are summed to provide a total DASS-21 score which is converted to the full DASS-42 score by multiplying by 2. Higher scores indicate higher levels of distress (Lovibond & Lovibond, 1995). A total DASS-42 score of  $\geq 60$  is considered the clinical cut-off point for depression, anxiety & stress with ranges from 0 to 120 (Beaufort et al., 2017). The scale has a Cronbach’s  $\alpha$  score of 0.81-0.91 (Lovibond & Lovibond, 1995) and has been used in other CSI studies as a measure of stress resilience (Kelty & Gordon, 2012, 2015).

## **Difficulty in Emotion Regulation Scale (DERS-18; Victor & Klonsky, 2016)**

The DERS-18 offers a cross sectional measure of participant awareness, emotional acceptance, impulse control and access to strategies of emotion regulation that assess difficulties in emotion regulation at a clinical level (with a focus on negative emotions) (Victor & Klonsky, 2016). It consists of 18 items. Example items include “I pay attention to how I feel”. Items are rated on a 5-point Likert scale from 1 = almost never, to 5 = almost always, and summed to create a final score (Victor & Klonsky, 2016). Total scores can range from 18 to 90, with higher scores indicating greater difficulty with emotion regulation (Gratz & Roemer, 2004). The scale has a Cronbach’s  $\alpha$  score of 0.98 (Victor & Klonsky, 2016) and has been shown to correlate with both mindfulness and resilience in other studies (Christopher et al., 2016; Sunbul & Guneri, 2019).

## **Five Facet Mindfulness Questionnaire (FFMQ-24; Bohlmeijer et al., 2011)**

Trait mindfulness is popularly researched using the FFMQ, which measures facets of describing, observing, non-judging of inner experience, acting with awareness and non-reactivity to inner experience (Bohlmeijer et al., 2011). The short form uses 24 items, 11 of which are reverse scored. Example items

include “I’m good at finding the words to describe my feelings”. It uses a Likert scale from 1 = never or very rarely true, to 5 = very often or always true. Scores can range from 24 to 120, whereby higher scores indicate greater mindfulness. It has a Cronbach’s  $\alpha$  score of 0.73-0.91 (Bohlmeijer et al., 2011). The short form has been used in both clinical and non-clinical populations to explore the efficacy of mindfulness in coping with real life problems (Baer, 2019).

## **Locus of Control (IE4; Kovaleva, 2012)**

The IE4 provides a reliable short form of locus of control (Cronbach’s  $\alpha$  scores of 0.75-0.8) that independently measures both internal and external locus of control (Kovaleva, 2012). The IE4 has only 4 items, two for each separate subscale. For the purposes of this study, the internal locus of control subscale was used. Example items include “If I work hard, I will succeed”. A 5-point Likert scale was applied from 1 = doesn’t apply at all to 5 = applies completely. Scores were averaged by the number of subscale items to provide a final mean score whereby high scores indicated high internal locus of control with a range of 1.0 to 5.0 (Bomba et al., 2018).

## **Optimism (Revised Life Orientation Test) (LOT-R; Scheier et al., 1994)**

The LOT-R is a well cited scale for measuring dispositional optimism during adjustment to adversity. The LOT-R has 10 items, 4 of which are fillers. Each item is rated on a 5-point Likert scale from A = I agree a lot (4), to E = I disagree a lot (0). Example items include “In uncertain times, I usually expect the best”. Higher values imply higher optimism e.g., 0-13 reflects low optimism, high pessimism, 14-18 reflects moderate optimism and 19-24 reflects high optimism, high pessimism (Chowdhury, 2020). The scale is reported to have a Cronbach’s  $\alpha$  score of 0.82 (Janssens et al., 2018) and has been used within police resilience studies (de Terte et al., 2014).

## **Rosenberg Self-Esteem Scale (SE; Rosenberg, 1965)**

The Rosenberg self-esteem scale measures global self-worth using 10 items. Example items include “I feel that I am a person of worth, at least on an equal plane with others”. The scale is used with a 4-point Likert scale from 3 = strongly agree to 0 = strongly disagree, whereby higher scores indicate higher self-esteem. The scale ranges from 0 to 30, with scores between 15 and 25 considered within the normal range. It has been shown to measure self-esteem with a Cronbach’s  $\alpha$  score of 0.77 to 0.88 (Rosenberg, 1965). It has further been used in the wider field of police coping research (Oginska-Bulik, 2005).

## **In depth Interview Materials**

### **Semi-Structured Interview Questions**

Interviews were designed from a phenomenological stance to explore the lived experience of the CSIs. Open ended questions were used to enable the participants to speak openly on the topic and express their voice (Creswell, 2020). A semi-structured approach enabled the interviewer to probe and explore

responses and build rapport by demonstrating listening and acknowledgment of the individual's significant contributions (Bryman, 2004). Topics covered a range of aspects of the role e.g. recruitment, training, coping and support. Questions included:

- How well do you think the induction process helped you in preparing you for the role?
- Could you describe to me what things you have around you, either at home or work, which you feel most support your ability to cope with potentially difficult or upsetting situations that you might encounter at work?
- How would you describe the working culture within the team?
- Which qualities do you think mark a colleague out as someone who is able to cope well or thrive in what some people might find a potentially upsetting or difficult situation?

## Procedure

### Online Survey Procedure

A Qualtrics online survey platform was used to create two electronic surveys (one for CSI employees; one for students) that included participant information sheets, consent forms, the questionnaire measures and the debrief information. The quantitative element of the survey consisted of the individual psychometric scales amounting to 108 items in total. As outlined above, the short forms of any scale over 20 items was selected according to their validation for use in large cross-sectional surveys to reduce participant burden whilst maintaining essence. The scales were presented in a random order with forced responding. Brief profiles for each group were included to capture data pertaining to: CSI level, time in current role, total number of years of service, total number of cases to date and number of absences in the past year; and for the student group: degree, year of study and University. Basic demographics data was also collected across all participants. Surveys were distributed through a Qualtrics link and took an average time of 22 and 39 minutes for CSI students and CSI personnel to complete, respectively.

### Interview Element

Participants were recruited via an invitation to participate that was sent via the crime scene manager. These CSIs were recruited separately from personnel who responded to the survey. Each participant gave their consent by signing a participant consent form online. The invitation and materials stated the voluntary nature of any participation and right to have data withdrawn. Participants' identities were kept confidential by assigning each interviewee a unique code. The interviews were held via a phone call and took an average of 55 minutes. This included a reiteration of each participant's right to withdraw their data or halt the interview at any point. The venue and method of each interview was chosen by each participant and, as a result, all were held via phone call, in a private room, enabling the participants to speak freely. No webcams were used. A USB digital recorder was used to record the interviews and all were transcribed verbatim. A debrief sheet was sent to each participant, including details of support organisations.

# Data Analysis & Screening

## Online survey

### Quantitative Analysis

A series of independent samples t-tests/Mann-Whitney U tests were undertaken to explore the similarities and differences between CSI personnel and the student group across the seven questionnaire measures. The latter reflected data screening revealing that the data was skewed and kurtosed for the CSI personnel for both the DERS-18 and the DASS-42 (created by multiplying the DASS-21 by 2 as prescribed by Lovibond & Lovibond, 1995) and skewed for CSE-13 and IE4. Data was skewed for the CSI students for IE4, BRS, DERS-18 and DASS-42. The set of Z-scores also showed that there were outliers in the CSI data for both DERS-18 and DASS-42. Therefore, parametric assumptions for an independent t-test were only met for the FFMQ-24, SE & LOT-R. For BRS, IE4, DERS-18 and DASS-42 the non-parametric equivalent, the Mann-Whitney U test, was used in data analyses (Coolican, 2014). Thereafter, multiple regression was used to explore predictors of coping within CSI, with locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), mindfulness (FFMQ-24), depression, anxiety and stress (DASS-42), self-esteem (SE) and optimism (LOT-R) entered as predictor variables and coping self-efficacy (CSE) as the outcome variable.

For the multiple regression analyses, the abnormal distribution of data for the CSI and CSI Students is not considered a concern (Field, 2017). Z-scores were satisfactory with scatter plots for each variable in both data sets showing linear relationships. A later Durbin-Watson test showed that adjacent residuals were not correlated and the variance inflation factor was satisfactory for each data set. However, due to the presence of outliers for the DERS-18 and DASS-42 in the CSI data set, Cook's Distance was also calculated to ensure validity of the data reported in the results section.

### Qualitative Analysis

The interviews were analysed using the six-stage Thematic Analysis (TA) process (Braun & Clarke, 2006). The data was read and re-read, the initial codes and label creation then produced, and the codes then combined to create themes. The themes, designed as "an idea or concept that captures and summarises the core point of a coherent and meaningful pattern in the data" (Braun & Clarke, 2006, p. 82), were developed in a reflective way driven by the participants' experiences. The process of creating themes also acknowledges the need for the researcher to reflect on their involvement in the process and accept how their own beliefs, background, assumptions and position within the social world in which the study has taken place in, can affect the analysis outcomes (Ackerly & True, 2010). To support this criteria, reflective visual mind maps were created, linking together the 'data buckets' (Braun & Clarke, 2019), alongside personal notes of reflection. The original codes were guided by frequency of occurrence and also by the strength of emotion and the detail and depth (represented by duration of time covered). This approach followed recommendations from prior qualitative research which suggested that counting responses misses the point of the discipline and studies should "seek not to measure but rather to understand and

represent” (Pyett, 2003, p1170). This in-depth analysis of individual experiences aimed to enable coping mechanisms employed within the demands of CSI work to be viewed inductively through the perspective of the participants.

## **Results**

### **Online survey**

#### **Quantitative Data**

Table 3 shows the mean, median, interquartile range and standard deviation for each group (CSI students and CSI personnel) with coping self-efficacy (CSE-13), locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), depression, anxiety and stress (DASS-42), mindfulness (FFMQ-24), self-esteem (SE) and optimism (LOT-R), for the 75 CSI personnel and the 88 students.

Table 3

*A table to show the mean, median, interquartile range (IQR) and standard deviation (SD) for coping self-efficacy (CSE-13), locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), depression, anxiety and stress (DASS-42), mindfulness (FFMQ-24), self-esteem (SE) and optimism (LOT-R) for CSI students and CSI personnel.*

Variable	Group	Mean	Median	IQR	SD
CSE-13	CSI personnel	91.88	97	31	20.88
	CSI students	75.94	76	34	23.60
IE4	CSI personnel	3.29	3.5	1.5	.89
	CSI students	3.51	3.5	1	.80
BRS	CSI personnel	3.68	3.83	1	.74
	CSI students	3.11	3.25	.96	.77
DERS-18	CSI personnel	34.55	33.00	10	9.17
	CSI students	45.75	44.00	17	13.09
DASS-42	CSI personnel	14.24	10	14	13.77
	CSI students	39.89	34.00	37	27.69
FFMQ-24	CSI personnel	85.05	84.00	14	12.43
	CSI students	75.36	75.50	16	10.29
SE	CSI personnel	21.69	21.00	9	5.27
	CSI students	16.66	17.00	9	6.34
LOT-R	CSI personnel	14.77	15.00	8	5.30
	CSI students	11.03	11.00	8	4.39

As compared to CSI students, CSI personnel were demonstrated to have significantly greater self-esteem ( $t(161) = -5.457, p < 0.001$ , two-tailed,  $r = .40$ ), optimism ( $t(161) = -4.926, p < 0.001$ , two-tailed,  $r = .36$ ), coping self-efficacy ( $U (n_1 = 88, n_2 = 75) = 2020.5, p < 0.001$ , two-tailed,  $r = -.33$ ), mindfulness ( $t(161) = -5.44, p < 0.001$ , two-tailed,  $r = .39$ ) and resilience ( $U (n_1 = 88, n_2 = 75) = 1963, p < 0.001$ , two-tailed,  $r = -.35$ ). They also reported significantly lower difficulties in emotion regulation ( $U (n_1 = 88, n_2 = 75) = 1564.5, p < 0.001$ , two-tailed,  $r = -.45$ ), depression, anxiety and stress ( $U (n_1 = 88, n_2 = 75) = 1256, p < 0.001$ , two-tailed,  $r = -.53$ ). However, there was no significant difference between CSI personnel and CSI students in report of locus of control ( $U (n_1 = 88, n_2 = 75) = 2852, p = 0.128$ , two-tailed,  $r = .12$ ). For all significant differences, effect sizes were large or medium.

## Exploration of the predictors of coping within CSI

In order to establish predictors of coping in each population, two multiple regressions were conducted with locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), depression, anxiety and stress (DASS-42), mindfulness (FFMQ-24), self-esteem (SE) and optimism (LOT-R) as predictors and coping self-efficacy (CSE-13) as the outcome variable using the enter method.

## CSI Personnel

Prior to conducting the multiple regression, correlations between variables were explored (see Table 4). These revealed that there were correlations between locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), depression, anxiety and stress (DASS-42), mindfulness (FFMQ-24), self-esteem (SE), optimism (LOT-R) and coping self-efficacy, but that multicollinearity was not evident (Field, 2017).

Table 4

*Correlation coefficients (and significance levels) for the predictor variables of locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), depression, anxiety and stress (DASS-42), mindfulness (FFMQ-24), self-esteem (SE) and optimism (LOT-R) with the outcome variable of coping self-efficacy (CSE-13) among CSI personnel.*

	IE4	BRS	DERS	DASS	FFMQ	SE	LOT-R
CSE	.214 (0.032*)	.632 (0.001**)	-.670 (0.001**)	-.591 (0.001**)	.628 (0.001**)	.461 (0.001**)	.305 (0.004**)
IE4		.291 (0.006**)	-.255 (0.014*)	-.209 (0.036*)	.303 (0.004**)	.492 (0.001**)	.499 (0.001**)
BRS			-.401 (0.001**)	-.594 (0.001**)	.529 (0.001**)	.509 (0.001**)	.317 (0.003**)
DERS				.665 (0.001**)	-.701 (0.001**)	-.513 (0.001**)	-.340 (0.001**)
DASS					-.561 (0.001**)	-.499 (0.001**)	-.346 (0.001**)
FFMQ						.672 (0.001**)	.445 (0.001**)
SE							.446 (0.001**)
[*p<0.05, **p<=0.01]							

The regression equation was significant  $F(7, 67) = 15.37, p < .001$ . It produced a large effect size ( $R^2 = .616, R^2_{adj} = .576$ ), and indicated that the model significantly predicted coping self-efficacy, accounting

for 62% of the variance in coping (i.e., a large effect, Cohen, 1988). Two of the predictors showed unique predictive power with coping self-efficacy. The BRS, measuring resilience, ( $t = 4.036$ ,  $df = 15$ ,  $p < 0.001$ ,  $\beta = .413$ ), which accounted for 20% of the variance. Here, the model predicted that a one unit increase in resilience would correspond with an increase of 11.65 in coping self-efficacy. Secondly, the DERS-18, measuring difficulties in emotion regulation, ( $t = -3.515$ ,  $df = 15$ ,  $p = 0.001$ ,  $\beta = -.429$ ), which accounted for 16% of the variance. Here, the model predicted that a one unit increase in difficulties in emotion regulation would correspond with a decrease of 0.976 in coping self-efficacy. No other variables had unique predictive power. Table 5 summarises the unstandardized (B) and standardized ( $\beta$ ) regression coefficients, t values and significance of each predictor variable on coping self-efficacy.

Table 5

*A table to show the unstandardized (B) and standardized ( $\beta$ ) regression coefficients, t values and the significance of each relationship for each independent variable; locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), depression, anxiety and stress (DASS-42), mindfulness (FFMQ-24), self-esteem (SE), and optimism (LOT-R) with the outcome variable of coping self-efficacy (CSE-13) among CSI personnel.*

Variable	B	Beta Value	T	Sig.
IE4	-.809	-.34	-.361	.719
BRS	11.615	.413	4.036	.001**
DERS-18	-.976	-.429	-3.516	.001**
DASS-42	-.18	-.012	-.102	.919
FFMQ-24	.258	.153	1.181	.242
SE	-.243	-.061	-.531	.597
LOT-R	.001	.001	-.001	.999
[*p<0.05, **p<0.01]				

## CSI Students

Prior to conducting the multiple regression, correlations between variables were explored (see Table 6). These revealed that there were correlations between locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), depression, anxiety and stress (DASS-42), mindfulness (FFMQ-24), self-esteem (SE), optimism (LOT-R) and coping self-efficacy, but that multicollinearity was not evident (Field, 2017).

Table 6

*Correlation coefficients (and significance levels) for the predictor variables of locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), depression, anxiety and stress (DASS-42), mindfulness (FFMQ-24), self-esteem (SE) and optimism (LOT-R) with the outcome variable of coping self-efficacy (CSE-13) among CSI students.*

	IE4	BRS	DERS	DASS	FFMQ	SE	LOT-R
CSE	.252 (0.009**)	.568 (0.001**)	-.593 (0.001**)	-.574 (0.001**)	.520 (0.001**)	.522 (0.001**)	.506 (0.001**)
IE4		.325 (0.001**)	-.226 (0.02*)	-.165 (0.06)	.122 (0.12)	.305 (0.002**)	.192 (0.04*)
BRS			-.627 (0.001**)	-.602 (0.001**)	.438 (0.001**)	.531 (0.00**)	.524 (0.001**)
DERS				.780 (0.001**)	-.642 (0.00**)	-.649 (0.001**)	-.586 (0.001**)
DASS					-.487 (0.001**)	-.651 (0.001**)	-.603 (0.001**)
FFMQ						.515 (0.001**)	.438 (0.001**)
SE							.668 (0.001**)
[*p<0.05, **p<0.01]							

The regression equation was significant. It produced a large effect size ( $R^2 = .475$ ,  $R^2_{adj} = .429$ ), indicating that the model significantly predicted coping self-efficacy,  $F(7, 80) = 10.36$ ,  $p < .001$ , accounting for 47% of the variance in coping (i.e. a large effect, Cohen, 1988). Whilst none of the variables had unique predictive power, two predictors trended towards significance. The BRS, measuring resilience, ( $t = 1.93$ ,  $df = 10$ ,  $p = 0.054$ ,  $\beta = .220$ ), accounted for 5% of the variance, with the model predicting that a one unit increase in resilience would correspond with a 6.7 unit increase in coping self-efficacy. The FFMQ-24 measuring mindfulness, ( $t = 1.98$ ,  $df = 10$ ,  $p = 0.051$ ,  $\beta = .214$ ) also accounted for 5% of the variance, with the model predicting that a one unit increase in mindfulness would correspond with a 0.490 unit increase in coping self-efficacy. Table 7 summarises the unstandardized (B) and standardized ( $\beta$ ) regression coefficients, t values and significance of each predictor variable on coping self-efficacy.

Table 7

A table to show the unstandardized (B) and standardized (β) regression coefficients, t values and the significance of each relationship for each independent variable; locus of control (IE4), resilience (BRS), difficulties in emotion regulation (DERS-18), depression, anxiety and stress (DASS-42), mindfulness (FFMQ-24), self-esteem (SE), and optimism (LOT-R) with the outcome variable of coping self-efficacy (CSE-13) among CSI students.

Variable	B	Beta Value	T	Sig.
IE4	2.277	.077	.874	.385
BRS	6.703	.220	1.953	.054
DERS-18	-.136	-.076	-.489	.626
DASS-42	-.153	-.179	-1.265	.210
FFMQ-24	.490	.214	1.978	.051
SE	.124	.033	.260	.796
LOT-R	.583	.108	.933	.354
[*p<0.05, **p<0.01]				

## Qualitative results

In total, six men and three women (mean age 39 years) were interviewed. They had an average of 16 years' experience as a CSI. The data analysis resulted in five main themes developed from the participants' reported experiences of managing stress, the psychological predictors they felt contributed to resilience and their experience of coping mechanisms. Each theme incorporated specific sub-themes.

### Theme 1: Being Resilient: Perceived self-efficacy and Confidence

There was a lack of clarity as to whether their ability to cope was a trait or a learned style of coping. The participants didn't always know what about their personality or skills helped them thrive, but their experiences captured a level of comparative self-efficacy and self-belief/confidence:

"I don't know what it is in my brain or in my mind that allows me to finish up at one horrific scene and then go home and go to sleep and not think about it again. I don't know what that is that means I am able to do that but for some reason I can. I don't know if that's something I have before the job or developed doing the job, but I can honestly say it's something that's not going to bother me." (P1)

Participants expressed in their discussions, descriptions of colleagues they felt were resilient:

“I mentioned earlier a pretty vague term of underlying confidence. High self-value thing, they [CSIs with resilience] know what they are looking at, they are aware of general forensic principles. Some people are confident with their own knowledge about how procedures work, so tend to do well at new incidents as they are applying the same principles. It gives you a good sort of basis dealing with something you haven't seen before.” (P6)

The CSIs linked how their confidence and sense of self supported them to handle potentially traumatic situations, by enabling them to proactively seek help if it were needed, for example:

“If you do feel like there is this something knocking your resilience you have to have the confidence to actually say it and someone will be able to help you and you still get the job done still. It's better to ask for help rather than soldiering through and making a mistake.” (P2)

The participants took on personal responsibility for resilience, and it is strongly apparent how they valued resilience as an essential part of being able to fulfil their professional duties. The importance of doing a good job and being part of the team was expressed by a number of the CSIs and managing their resilience levels was seen as part of that. This collective sentiment is summarised in the following:

“Definitely it [resilience] is important, because if you go along to a job and it affects you too much then it will affect your ability to either go and do any more jobs or certainly if you go to similar type of job you will be worried about how it will affect you.” (P4)

This sense of responsibility and duty as a core value supported the CSIs to manage difficult situations at work. One participant recognised their work identity enabled them to handle potentially upsetting situations:

“Some people, if someone started shouting and swearing at them, would break down in tears. Which isn't unreasonable. But you can't do that can you as you are representing the police and obviously you've got to put on a professional front. For me, I think that's really important. (P6)

The CSIs were clear about their own personal ability to manage potentially upsetting scenes, even if they could not describe what about their character enabled them to do so. They applied performance experience (so attending similar types of crime scenes and managing these well) and imaginal experience (so envisaging what they may have to handle in advance, before they reached the crime scene) to build their self-efficacy, which in turn reinforced their confidence in dealing with crime scenes.

This theme suggests that a proportion of coping appears to have the potential to be taught through experience, training and role modelling, especially once in the role.

## **Theme 2: Utilisation of positive coping mechanisms – Collegial Support, Humour and Exercise**

This theme describes the coping mechanisms used by the CSIs, and how they used them. All the participants expressed self-awareness of the coping mechanisms they used. Social support – and in particular support from colleagues – was cited frequently. As one participant noted:

“I had the chance to move for more money, but I turned it down as I do really like the team I work with. We do a lot of things outside of work, and we’ve been on holiday together and go out together. Things that help personal relationships. And I feel like if I did have a concern, they would be the perfect people to address it. They have so much experience, you are talking to someone who understands it.” (P6)

This perceived support from peers was reported as being very important and participants described a very close-knit relationship with their co-workers, including outside of work. The participants reported how social support helped with difficult experiences, as it ensured they always had someone to talk to, if they needed to. The need to respect confidentiality around cases at work and not burden friends and family with details was important to participants and was presented as a potential barrier to sharing experiences about their work. This suggests that those without a social network within work – even if they had strong connections outside of their professional colleagues – may feel isolated, out of a sense of responsibility towards their profession and to protect others:

“Family...it's obviously you don't potentially want to describe some of the stuff to them because it could encourage more worry. It's not that extreme [what we deal with], but people have obviously different thresholds of what they think is hard to deal with, so I keep it close to work friends I say.” (P2)

Another coping tactic mentioned by at least two-thirds of participants was humour. Its use seemed to vary amongst participants, with more than half capturing it as a way of having a conversation and seeking social support from others. It was presented as a way of building bonds and sharing experiences but also as a form of detachment (or emotion-regulation) from the reality of the experience:

“You couldn't write it sometimes...you are dealing with the public and it can be mind blowing at times and you just have to talk through it and laugh. Some of the things, you might take a photograph and then you get back to the office and say look guys ‘I’ve done X, Y or Z’ and you have to have a laugh about.” (P2)

“For me personally, I think humour helps. Others might disagree. You’re not laughing or having a joke about the sad situation. You aren’t laughing at them. You are having a laugh about a particular aspect to take your mind off it.” (P4)

Exercise as an effective coping mechanism was another common tactic described by half of the participants. It was used by some as a way of switching off and distraction:

“When I go out cycling on my own I might sometimes I might go out for four hours. It’s four hours where you aren’t thinking. When you are exercising you aren’t thinking about anything else really. You are concentrating on what you are doing.” (P5)

Others also recognised how exercise offered a route to reinforcing or building a support network and was another opportunity to connect with others. For instance:

“One thing I do, is play tennis. I really enjoy that. Well, I can tell you exactly how long, seven years ago, I got involved in police tennis. Every year we have a national competition which a different police force hosts that every year. I’ve been to Glasgow, Cardiff, Devon, Belfast, Norfolk, Liverpool... and met people from the whole country. And that’s brilliant. It’s once a year for a few days. You get to know these people, all different ranks and roles. I could recommend something like that for sure to someone.” (P7)

One behaviour the majority of participants consistently described was the two-way communication between colleagues. Part of processing potentially upsetting scenes involved telling their story to others who understood, with even more senior team members recognising that by asking others, they themselves also benefitted:

“I make sure that we have that conversation. To ask ‘How are you, anything worrying you?’ Just made sure their well-being...that they were fine. It helped me sort of talk about my wellbeing too. I found that quite useful.” (P3)

This importance of talking and being heard was confirmed by other participants with less seniority, with many commenting on how open the office culture was and the willingness to ensure everyone was ok. For example:

“It’s very easy just to speak to each other about things. If you go to something that is likely to cause a reaction, others ask how you are when you get back so that’s good.” (P6)

“It’s important to generally be an open person, to be talking to people. If all your plates are on the table, it builds up trust which I think helps coping. They are asking you questions, and you are asking them questions.” (P4)

The participants’ experiences suggest those without a strong relationship with colleagues could be at risk of an increased negative response if exposed to traumatic situations. The theme also revealed humour and exercise as successful coping strategies to manage the day-to-day stresses of being a CSI employee.

## **Theme 3: Managing the unknown – The importance of mental preparation**

A number of participants described how they thought planning and preparation helped them cope with both the expected and unexpected. They frequently depicted their role as different from other emergency services and how this distinction of being given advanced knowledge of a scene helped them mentally and physically prepare. Even in very usual situations and ones which would be distressing to the general public, this sense of being prepared supported the CSIs to handle and process what they were seeing, this collective sense of being forewarned and forearmed is articulated below:

“A big part of it for me, is obviously the police officers are the first to attend and they go in and they see whatever they see. Then it tends to get fed back to us so we’re like second response. So, by the time I go I should know if there’s someone dead in the address, where they are and what’s happened to them. And if there’s anyone alive at the address. Or was anyone. All those facts beforehand I think put me into part of... it’s not like a horror movie where they go into a house on your own and you know there’s a murderer in there and your heart rate is going because you are thinking at any point I might be in danger. It’s already a predetermined scene. What we are going into should be known, not unknown. It’s still a big shock when you first see a person who has had their face eaten off...but you know you are going into see that. So, there’s a level of you that can anticipate what will look like so it’s less of a shock.” (P6)

“I’ve also thought I’m quite fortunate in that I know what I’m going to. So, it might be a terrible murder, or something like that, but when I turn up at a scene or a body, I know what I’m getting into. I can imagine what I’ve got to do. Rather than a member of the public or police officer opening the door and finding something in front of them. I think that would be more disturbing than some of the things I do.” (P5)

Several participants described taking steps to prepare for the unknown, by controlling the factors that they felt were within their power to do so. For example:

“You need to be logical. You’ve got to be able to work something through from start to finish methodically and be able to come up with a plan of how you’re going to do it and carry it out. If you go in and think ‘I can see that, I can see that, I can see that, I can see that’...it’s much better to be able to say ‘I’m going to get this sorted with this first and then this’....I like to know where everything is so when I need it I know where it is. Where stock levels are things like that, so I know if I’m at a job and I need something, I’d like to be able to think in the back door third drawer that’s where this is.” (P1)

This participant’s description of how their systematic approach to scenes appeared to provide the CSIs with a way of managing complex and potentially upsetting situations echoed common sentiments across the dataset.

“You’ve always got to have a plan b, a c, maybe a d, maybe an e. It never goes the way you think when you work for the emergency services. You’ve got to try and second guess yourself. When you are at a major scene, you see things which you think, ‘oh that’s really simple’. And then someone might say ‘Have you looked at that window? What happens if someone climbed in through that window?’ You are always second guessing yourself. If we don’t turn up or do something, there’s no one else. You have to have something in the back pocket to save the day.” (P3)

The participants expressed clearly how they approached scenes methodically. They reported the value of drawing on existing experience and how that helped them cope with new situations. The quality and level of detail received before they attended a scene helped them mentally and physically prepare for what they were about to experience.

## **Theme 4: Embracing meaning in work**

This theme reflects the participants' enjoyment of their role, and the privilege they felt in helping others and how they found meaning in their work.

There was a repeated acknowledgment of the pride in their work and a recognition of the importance of taking care of their psychological needs as one part of being good at their job. These extracts capture this:

"I've always thought it's about being professional. If you are to say you are professional that covers a gambit of being good at your job, whether that's your skills, your wellbeing, emotions, the way you talk to people, the respect for the job, your confidence. It's a global thing. I think if you can say you've done the most professional job I can, then that covers everything really, including resilience." (P3)

One aspect of their role that participants emphasised was the link between crime reduction and their everyday work. References to the importance of accurate processes and evidence collection and the wider role within the justice system were frequent, suggesting again that finding meaning in their work was important. For example:

"I like, perhaps it doesn't happen as much as they used to because we don't tend to get as much notification now about results, but there is still quite a satisfaction in knowing that you've actually recovered something that's identified someone or help disprove or proven it. There is that satisfaction that you've done a good job and you got the evidence that has been crucial." (P1)

"You get to serve the public, help people out in difficult situations like if they've been broken into. You get the opportunity to find the baddie, to find the nugget of evidence to find out who has done it. You are part of that little sort of chain of evidence...you find it, someone else identifies that fingerprint you find to a suspect and then someone goes and arrests them." (P3).

The sense of purpose found in helping people and the meaning of the CSIs' work to wider society was identified as a driver leading to professional pride. Their skills underpinned this, leading to a task-focussed approach which could potentially support participants to handle difficult situations.

## **Theme 5: Induction: supportive mentoring v "thrown in at the deep end"**

Within the experiences shared by the CSIs, a key contrast was present between those who had recently joined the force and those who had served for over 20 years. A core initial residential course was a common part of everyone's induction, but the process after that course differed significantly, with older colleagues describing how they were "thrown in at the deep end," (P7) with the expectation they would immediately undertake significant crime scenes alone.

"You came back [from the course] and you did the job really. You could find yourself doing a murder in the first week of coming back. Usually not on your own, but we wouldn't expect new recruits to do that now..."

back then they were so stretched and there was not much time. You couldn't afford those luxuries really." (P5)

There was a universal recognition by older colleagues that today's recruits have more support on hand and have a staged learning process compared to their own experiences. The majority of longer-serving participants reflected that these changes were for the better, but that they did not feel any negative personal impact despite the lack of support they received at the time:

"It's better to offer more support when people start out should they need it. It didn't cause me too much of a problem, I just got on with it. But I'm just that way. I can't say how I got into the job had any negative effect on me, but thinking about it, it's probably better now. I didn't find it [the lack of support during induction] detrimental to me." (P9)

Those who had undergone their induction more recently described a detailed checking process, designed to measure the quantity and quality of their work. The dominant view was that this supports resilience and helped them prepare for working alone:

"You have to be checked off against all the different crime types and evidence recovery types and you have to witness it being done once and do it twice I believe. Or witness twice and do it once. You have to make sure you are signed off with your mentor, and then you are unleashed on the world." (P3)

Observing and learnt behaviour appeared to be a key feature of the newer recruits' induction experience:

"I joined and had a month of shadowing, just attending the crime scene with anyone who is on. I had a set mentor and most of my work was done with him. When you return to the force you get an induction pack and a portfolio which has jobs to be signed off. You have to witness that you've gone to three types with a senior to mentor you. Once they've signed you off for a further three, it's deemed you are competent." (P6)

It was clear that all the CSIs valued their induction experience. They felt it appropriately prepared them for their role, whether they had gone through the older or new process. There was a shared recognition amongst the more experienced CSIs that formal shadowing and mentoring support was beneficial and an improvement on previous practice.

Our qualitative data therefore supported our quantitative data in that factors such as resilience (including self-efficacy and self-belief/confidence) and ability to regulate one's emotion for example, through processes of planning, mental preparation and humour, were key to coping, but that further aspects of the role, not assessable by questionnaire, such as collegial support and finding meaning in work were also important.

## Discussion

To enable exploration of factors influencing successful coping among CSI Personnel we explored: i) the extent to which optimism, self-esteem, resilience, LOC, emotion regulation and mindfulness as well as depression, anxiety and stress, predicted successful coping in current and future CSI personnel; and ii) current CSIs' understanding of personal resilience and factors that have supported and hindered their ability to perform their job roles. Main findings of the current study were that CSI employees, as compared to those in training (i.e., students), reported greater self-esteem, optimism, coping self-efficacy, mindfulness and resilience. CSI personnel, as compared to students, further reported lower difficulties in emotion regulation as well as depression, anxiety and stress. Additionally, and more importantly, for CSI personnel the main factors predictive of successful coping were resilience and emotion regulation, whereas for students no unique predictors emerged (although mindfulness and resilience trended towards being a significant predictor). These findings fit well with the qualitative data, where resilience (comprising of self-efficacy, self-belief/confidence, emotion-regulation) was deemed to be an important trait for coping with the challenges of being a CSI and also for performing the job well. However, these qualitative analyses further revealed that finding meaning in work, as well as good collegial relations were key factors for CSI personnel that engendered better coping and resilience. Results will now be discussed.

In CSI personnel, resilience and emotional regulation were found to be unique significant predictors of coping. Resilience is generally perceived as an ability to bounce back following challenges (Windle, 2010; Janssens et al., 2018; Van-der-Meulen et al., 2019). In the current study it accounted for 20% of the variance in coping. This accords with the research of Rosansky et al., (2019) who found that high levels of resilience reduced the frequency and intensity of PTSD among CSIs. Resilience has also been found to be: i) an antecedent to a positive outlook, optimism, and hope; ii) a buffer to stress (Baumeister et al., 2003; Prati & Pietrantonio, 2010); and iii) lead to increased levels of self-esteem (and vice versa; Mehta et al., 2019). These latter findings all fit with a further result of the present study, this was the observation that CSIs not only had greater levels of resilience as compared to our student 'trainee' population, but also greater levels of self-esteem, optimism and coping self-efficacy, and reduced levels of depression, anxiety and stress. Indeed, similar to our research, Kelty & Gordon (2015) also found that 'resilient' successful CSIs demonstrated significantly lower anxiety, but significantly elevated self-efficacy, as compared with the general population and police recruits. Thus, resilience appears to be: i) one of the main attributes that can promote active coping (see here also Prati & Pietrantonio, 2010); ii) correlates well with self-esteem, optimism, LOC, emotion regulation, coping self-efficacy, depression, anxiety and stress in CSI employees (see our Table 4); and iii) is a measurable and assessable attribute that can be selected for.

Importantly, the above findings were supported by our qualitative results. Here, resilience was considered by CSIs to be essential for them to cope with their role and included self-efficacy and self-belief. The coping mechanisms identified in the qualitative interviews were consistent with previous studies into CSI stress coping methods. Indeed, findings further showed that social support (Perez et al., 2010), humour (Salinas & Webb, 2018), and exercise (Rosansky et al., 2019) were frequently used coping mechanisms.

A further main finding of the present study was that emotion regulation was also a unique significant predictor of coping for CSI attributes (but not for students) accounting for 16% of the variance. Emotion regulation reflects emotional competence level, that is, the use of emotions and the ability to understand emotions (Parker, 2005). Emotion regulation is considered important for psychological health and wellbeing (Aldoa et al., 2015; Augusto-Landa et al., 2011) and has been shown to impact on emotional states, responses and clarity of thought (Jha et al., 2017). Quick and Cooper (2017) suggest its benefit within CSI is as a support to active coping. Somewhat consistent with this, Kelty and Gordon (2012) purport emotional intelligence (EI) as an important screening factor for top CSIs. EI is conceptually related to emotional regulation (Bucich & McCann, 2019). Yet, whereas EI relates to the capability to perceive emotion, use emotion to enable thought processes, comprehend and manage emotions (Mrozowicz & Kobylinska, 2011), emotion regulation considers the processes involved in controlling which emotions are present and when they occur (Gross, 1999). To date, no studies have explored emotion regulation in CSIs, but as emotion regulation is trainable (see Maratos et al., 2019), whereas EI is generally considered a static trait and therefore largely inherent (Petrides & Furnham, 2001), understanding its role in coping is an important advancement in understanding successful coping in CSI personnel and what factors should be screened for or can be promoted in training programmes. Notably, in our research, unique variance accounted for by emotion regulation was similar to that accounted for by the more traditional measure of resilience.

The importance of emotion regulation for successful coping in CSI personnel, was also evident in our qualitative data analyses. Here, the participants articulated the importance of task-oriented focus in building resilience to a scene. The participants described how they often only later absorbed the severity of their work, having instead at the time and at the scene concentrated on performing their role to a high-professional standard. They regulated their emotion at the scene, and sought social support later. This clearly evidences how successful coping for CSIs involved good emotion regulation, i.e., controlling which emotions are present and when they occur and using humour as a shared emotion regulator.

Surprisingly, we did not find that optimism, self-esteem, locus of control, mindfulness nor depression, anxiety and stress predicted successful coping in our quantitative analyses. One reason for this is that the various factors we measured are interrelated or intertwined with resilience or emotion regulation. Certainly, it has been purported that increases in resilience may be contingent on levels of optimism (and vice-versa) (de Terte et al., 2014; Souri & Hasanirad, 2011). Additionally, self-esteem has been shown to support resilience, coping and self-efficacy (Charney, 2004; Prati & Pietrantonio, 2010; Mehta et al., 2019); and resilience has been shown to increase self-esteem (Mehta et al., 2019). Together, these attributes may have acted as protective factors against the effects of trauma under the super-ordinate construct of resilience, minimising levels of depression, anxiety and stress, as has previously been reported (Park et al., 2019; Prati & Pietrantonio, 2010). This would suggest that these coping attributes may all be related aspects - as we found in our correlational analyses. Alternatively, it could be that resilience is the super-ordinate coping attribute, as verbally expressed by participants in our qualitative analyses and, alongside, emotion regulation, that which is most important when understanding (or screening for) successful coping among CSI Personnel.

In exploring our data further, we investigated differences in our key variables/attributes in CSIs as compared to potential future CSI personnel. Here, we found differences in coping self-efficacy *per se*, with our CSIs demonstrating better coping self-efficacy. In accounting for this result, higher coping self-efficacy in our CSI sample may reflect natural attrition; e.g., trainee CSI students reporting lower in this attribute pursue careers outside of CSI; in other words, self-selection for the role, or otherwise, occurs (Sollie et al., 2017). Alternatively, consistent with Mrevlje (2016), it could be that coping self-efficacy increases over time as experiences within the day-to-day role allows for development in such. Mrevlje reported that experience (familiarity with a situation rather than years of service), time to plan and previous success in the role enabled approach style or 'active' coping and this was further evidenced in our qualitative data. In our research, participants placed a distinction between their role as a secondary attendance on scenes compared to other emergency service personnel. They reported how they found that this time and information before arrival at a potentially traumatic situation supported planning and potentially reinforced situational confidence and self-efficacy. This supports the concept of psychological mastery (Aldwin, 1996) which suggests getting through one situation increases confidence about future events. The qualitative findings also showed the value the participants' placed on their induction and how they saw mentoring as an important way to helping CSIs develop successful coping mechanisms. They reflected on how this compared to their own inductions. They stated how this vicarious learning and an opportunity for learnt behaviour provided a means of building confidence before working crime scenes alone.

We further found self-esteem and optimism to be higher in our CSI sample than our student recruits. As self-esteem is an important coping factor in high trauma roles (Prati & Pietrantonio, 2010) and optimism a key trait among successful CSIs (Kelty & Gordon, 2015), self-selection for the role may also be in evidence here. Likewise, our CSI population possessed better emotion regulation, greater mindfulness and reported lower depression, anxiety and stress levels, despite the probable increase in their emotional labour due to the role (as compared with being a student). In explaining this, the qualitative interviews revealed that for CSI personnel, coping was often achieved through receiving perceived and actual collegial social support. Indeed, the CSI personnel in this study relied on their professional networks to provide a safe place to seek practical and emotional support and talk about experiences. This is consistent with other qualitative studies into police officers, fire fighters, and National Health Service staff (Shakespeare-Finch & Daley, 2017; Ching et al., 2020). The CSI personnel reported a reluctance to seek support from their personal networks, being mindful of overburdening family; for example, causing distress or worry, and potentially breaching confidentiality of cases.

Finally, one further result of the quantitative data was that we observed no difference between the CSI and student population with respect to locus of control (LoC) and nor was it a significant predictor of successful coping. This suggests that LOC, as measured using the IE4 (Kovaleva, 2012), was not a particularly important attribute of successful coping in the current sample of CSI personnel. This in direct contrast to the previous research of; Sollie et al., 2017 in relation to self-selection of cases; Salinas & Webb, 2018 in relation to planning; and Groth et al., 2019 in relation to successful coping. However, our qualitative data provided examples of strong perceived behavioural control and situational confidence.

This data revealed CSI personnel to see themselves as at a reduced risk of experience of an adverse mental health impact compared to others. The discussions also showed how a lack of control over the type of jobs sent to negatively influenced perceived coping. The frequency of exposure to the same type of incidents was cited by several participants as a potential contributory factor in a decline in resilience. The participants' reflected that multiple trauma could cause more of a psychological impact compared to a single-experience (also found in Littleton et al., 2012). They reported how single, high-profile cases where wellbeing support was often offered, actually had less of an impact on their ability to cope, compared to multiple concentration of a specific type of case – say attending three hangings in as many days or several road traffic accidents. Thus, the qualitative data revealed that either varying case load or introducing additional measures to allow CSI personnel to voluntarily veto cases which they self-identified as more likely to reduce their general successful coping, increases locus of control and by association successful coping.

In our qualitative analyses we further explored understanding of personal resilience and factors that have supported and/or hindered the ability of CSI personnel to perform their job roles. A key finding here was the CSIs' professional pride, skills and their finding meaning in work. The CSIs interviewed linked their professional pride to their and others' ability to cope. This again supports the findings of previous studies investigating stress amongst those in the emergency services (Olsson et al., 2003; Rosansky et al., 2019). The qualitative findings showed how CSIs see themselves as part of the wider justice framework and how they find meaning and satisfaction in helping people in crisis and delivering a public service. This supports the theory of Janoff-Bulman (1989) who identified Self-Worth – namely an individual's assumption that he or she is a good, moral, worthy, and decent individual – to increased resilience to trauma. It further fits with the construct of psychological hardiness, which Janssens et al. (2018), suggests relates to an individual's ability to change events around them into something meaningful.

## **Summary, Future Directions & Conclusions**

In summary both the quantitative and qualitative findings of the present study revealed that of the various attributes explored, resilience and emotional regulation were key factors that enabled successful coping in CSI personnel. These, we would argue, are therefore important factors that should be screened for when considering selecting for CSI recruits. However, our qualitative analyses further revealed both locus of control and finding meaning in work to be important for the lived experience of successful coping. These antecedents of successful coping, whilst difficult to untangle using traditional quantitative measures, would be important to include in potential training and CPD curricula. Indeed, training and education among CSI personnel (and students) has been stated as crucial for longevity and reducing attrition rates by the National Research Council (NRC; 2009). Therefore, future research should aim to build on findings of the current study by investigating the effects of behaviour change interventions employed with CSI personnel to improve emotion regulation and resilience training, as well as educate CSI individuals as to the importance of locus of control and finding meaning in their work. This could be achieved via role modelling of those already accomplished in their role. Certainly, our qualitative data spoke to the importance of how mentoring in the induction process for CSIs helps prepare new recruits

well for their future role. It is also suggested that conversations that encouraged new recruits to find a sense of meaning in their work and potential coping strategies (e.g., humour, collegial support, exercise etc.) could be introduced at this early stage.

To conclude, CSIs who are able to cope successfully in this high emotional labour role possess good emotion regulation skills, are resilient (i.e. bounce back from challenges), have a strong in-work social support network, have locus of control over their work type and crime scenes, and find meaning in their work. If these attributes are either selected for in recruitment processes or are introduced in training curricula then they may serve as a means to increase coping and longevity in the profession via increased staff well-being and retention (and therefore also reduced absenteeism).

## Declarations

**ETHICAL STATEMENT:** No funding, grants or support were received for this research.

**Conflict of Interest:** Author 1 declares that she has no conflict of interest to disclose. Author 2 declares that she has no conflict of interest to disclose. Author 3 declares that she has no conflict of interest to disclose. Author 4 declares that she has no conflict of interest to disclose.

**Ethical Approval:** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

This article does not contain any studies with animals performed by any of the authors.

**Informed Consent:** Informed consent was obtained from all individual participants included in the study.

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