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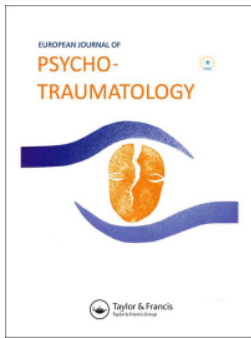
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BASIC RESEARCH ARTICLE



Associations between individual cognitive factors, mode of exposure and depression symptoms in practitioners working with aversive crime material

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ABSTRACT

Background: There is extensive literature on front-line officers and investigators exposure to trauma and its negative impact on them. However, there are analytical practitioners in law enforcement who indirectly work with the traumatic experiences of other people daily, but are seldom the focus of academic research.

Objective: Our goal was to conduct the first international study with these practitioners to identify the risk of depression symptoms and establish whether potentially modifiable risk factors (belief in a just world, mental imagery and thought suppression) and work-related characteristics (medium of exposure) are associated with depression.

Method: 99 analysts and secondary investigators employed in police and law enforcement organizations from the UK, Europe and Canada participated in the study. The online survey was advertised to employees via their employers but hosted without employer access. Multiple regression was used to analyze the data.

Results: After controlling for age, gender, ethnicity, previous exposure to trauma, and marital status, four potential risk factors were identified. Analytical practitioners with vivid mental imagery, those exposed to crime material via auditory *and* visual means, those who suppressed intrusive thoughts, and those who believed in a just world reported more depressive symptoms.

Conclusions: The majority of our sample reported clinical levels of depressive symptoms. Four potential risk factors accounted for just under half of the variance in depression scores. We consider strategies that can be used to mitigate the potential negative influence of these factors and suggest that these are established as risk factors for depression symptoms via future longitudinal research.

Asociación entre los factores cognitivos individuales, modo de exposición y síntomas de depresión en profesionales que trabajan con material criminológico aversivo

Antecedentes: Existe una amplia literatura sobre la exposición de agentes e investigadores de primera línea al trauma y su impacto negativo en ellos. Sin embargo, hay profesionales analíticos en las fuerzas del orden que trabajan indirectamente a diario con las experiencias traumáticas de otras personas, pero que rara vez son el foco de la investigación académica.

Objetivos: Nuestro objetivo fue realizar el primer estudio internacional con estos profesionales para identificar el riesgo de síntomas de depresión y establecer si los factores de riesgo potencialmente modificables (creencia en un mundo justo, imágenes mentales y supresión de pensamientos) y las características relacionadas con el trabajo (medio de exposición) están asociados con la depresión.

Método: Participaron en el estudio 99 analistas e investigadores secundarios empleados en la policía y organizaciones encargadas de hacer cumplir la ley en el Reino Unido, Europa y Canadá. La encuesta en línea se anunció a los empleados a través de sus empleadores, pero se realizó sin acceso del empleador. Se utilizó regresión múltiple para analizar los datos.

Resultados: Después de controlar por edad, género, origen étnico, exposición previa a un trauma y estado civil, se identificaron cuatro factores de riesgo potenciales. Los profesionales analíticos con imágenes mentales vívidas, los expuestos a material criminal a través de medios auditivos y visuales, los que suprimieron los pensamientos intrusivos y los que creían en un mundo justo informaron más síntomas depresivos.

Conclusiones: La mayoría de nuestra muestra reportó niveles clínicos de síntomas depresivos. Cuatro factores de riesgo potenciales representaron poco menos de la mitad de la varianza en las puntuaciones de depresión. Consideramos estrategias que pueden usarse para mitigar las posibles influencias negativas de estos factores y sugerimos que se establezcan como factores de riesgo para los síntomas de depresión a través de futuras investigaciones longitudinales.

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KEYWORDS

Depressive symptoms; aversive crime material; modifiable risk factors; mental imagery; thought suppression; belief in a just world

PALABRAS CLAVE

Depresión; creencia en un mundo justo; supresión del pensamiento; imágenes mentales; material criminológico aversivo; factores de riesgo modificables

关键词

抑郁; 对公正世界的信念; 思想抑制; 心理意象; 令人厌恶的犯罪材料; 可改变的风险因素

HIGHLIGHTS

- Analytical practitioners are exposed to aversive crime material on a daily basis. The impact of their work and the individual and work-related risk factors are currently unknown.
- In this sample, 52% of analytical practitioners had moderate depression symptoms, and 37% had severe depression symptoms.
- Modality of exposure (both auditory and visual exposure), belief in a just world, thought suppression, and mental imagery are potential modifiable risk factors.

处理令人厌恶的犯罪材料的从业者的个人认知因素、暴露模式和抑郁症状之间的关联

背景：有大量关于一线官员和调查人员暴露于创伤及其负面影响的文献。然而，执法部门有一些分析从业者每天间接地处理他人的创伤经历，但很少成为学术研究的焦点。

目的：我们旨在与这些从业者进行第一项国际研究，以确定抑郁症状的风险，并确定是否存在潜在可改变的抑郁相关风险因素（对公正世界的信念、心理意象和思想抑制）和工作相关特征（暴露媒介）。

方法：来自英国、欧洲和加拿大的警察和执法机构雇用的 99 名分析师和二级调查员参与了这项研究。该在线调查是通过雇主向员工发布的，但雇主没有访问权限。使用多元回归来分析数据。

结果：在控制年龄、性别、种族、既往创伤经历和婚姻状况后，确定了四个潜在的风险因素。具有生动心理意象的分析从业者、那些通过听觉和视觉方式暴露犯罪材料的人、那些抑制闯入性想法的人以及那些相信公正世界的人报告了更多的抑郁症状。

结论：我们的大多数样本报告了抑郁症状的临床水平。四个潜在的风险因素占抑郁评分差异的一半以下。我们考虑可用于减轻这些因素在负面影响的策略，并建议通过未来的纵向研究将这些因素确定为抑郁症状的风险因素。

Front-line police officers are exposed to traumatic events frequently while executing their role and there is sufficient empirical evidence that this raises their risk of mental illness, namely depression, anxiety, post-traumatic stress disorder (PTSD) and complex post-traumatic stress disorder (CPTSD) (Brewin et al., 2022; Collins & Gibbs, 2003; Davies et al., 2022; Violanti et al., 2006; Wagner et al., 2020). However, other police and law enforcement staff, who are not working in a front-line role, are at risk of vicarious trauma, the severe and lasting psychological effects resulting from the secondhand repeated exposure to traumatic experiences (McCann & Pearlman, 1992). Vicarious trauma can cause changes in self and professional identity, one's views of the world, self-capacities and psychological needs and beliefs relating to safety, trust, esteem, intimacy, and control (Saakvitne et al., 1996). Besides the negative changes in the aftermath of a secondhand trauma, this group of practitioners are seldom the focus of research (Duran & Woodhams, 2023; Kindermann et al., 2020; Wortley et al., 2014).

These practitioners include intelligence analysts, digital forensic analysts, crime analysts, police researchers and behavioural investigative advisors (herein after 'analytical practitioners') who provide analysis, intelligence and support to investigations and prosecutions of the most serious of crimes. Depression, in particular, is prevalent in police officers and staff; for example, Stevelink and her colleagues (2020) found depression to be 2.5 times more prevalent than other mental disorders (anxiety and PTSD). For these reasons, this paper gives particular attention to 1) potential modifiable risk factors for depression symptoms (herein after 'depression') in 2) analytical practitioners working with aversive crime material.

The medium through which analytical practitioners receive information about traumatic experiences of other people and their approach to analyzing it

differs (Brewin et al., 2022). They receive aversive material via auditory and visual means combined (watching footage of abuse, watching a victim's video interview or watching CCTV videos), solely auditory (listening to torture or translating accounts of abuse), or solely visual (reading detailed account of abuse or written reports). Further, their approach to analyzing the material is case and unit-dependent. For example, some analyze perpetrator behaviour in detail to produce a crime linkage report, some classify images of abuse, and some must 'put themselves in the shoes' of victims or offenders to produce behavioural investigative advice for the police (Duran et al., 2019). Research (Mastroberardino et al., 2008) has found that information is recalled easily when presented via auditory and visual means together because different information systems are activated when the material is presented separately (one sensory modality) or together (dual modality) (Paivio, 1986). The sensory richness of information available in trauma memories (via dual modality) provides various potentially triggering stimuli (Ehlers & Clark, 2000). Therefore, drawing on existing theories and research, we have proposed that the medium through which analytical practitioners receive aversive material might affect degrees of psychological distress.

Depression can be developed and maintained via cognitions, which can take the form of verbal thoughts (e.g. I feel lonely) and mental images (e.g. seeing myself lonely in the mind's eye) (Beck, 1976; Craske et al., 2009; Gotlib & Joormann, 2010). Mental imagery refers to seeing with the mind's eye in the absence of stimuli and can act on the nature of previous memory (Holmes et al., 2009; Kosslyn, 2005). This could act as a risk factor as individuals having vivid mental imagery have more vivid images/intrusive memories upon a recall of the distressing information (Morina et al., 2013). Specifically, analytical practitioners working with the traumatic experiences of other people as a part of their daily work might associate other people's

trauma with their own memories through mental imagery (e.g. when reading about a victim walking along a river, they may imagine a riverside walk that they are familiar with). This might be particularly likely where they have a propensity for vivid mental imagery. When next encountering the stimulus from their own personal life, the associated memory for the trauma may also be recalled, which we would hypothesize could lead to hopelessness, low mood and other negative affect.

Thought suppression is a cognitive strategy that has been presented both as a risk and resilience factor for mental disorders (e.g. depression and PTSD) (Beck, 1976; Beevers et al., 1999; Duran & Woodhams, 2023). Duran and Woodhams (2022) found that analytical practitioners cope with the nature of their work by actively suppressing unwanted intrusive thoughts related to traumatic material when they come to mind. However, in the literature (Ehlers & Clark, 2000), this is considered maladaptive because the suppression of recollections of the traumatic event can increase the likelihood of them coming back to mind (Miller et al., 2019). Thought suppression could be a protective factor when stress levels are low, but it could be a risk factor when life stress increases. This tendency of suppressing thoughts under elevated levels of stress might then contribute to depression, an emotional state that the vulnerable person is trying to avoid (Beevers & Meyer, 2004; Wenzlaff & Luxton, 2003). This can be explained via the Ironic Process Theory (Beevers et al., 1999) where mental control has two mechanisms: an operating process (effortful and conscious) that seeks thoughts to promote the preferred state, and a monitoring process (less mental effort and unconscious) that searches for mental content that signals the failure to achieve the desired state. For example, when a person is trying to be happy, the operating process distracts the mind with desired, positive thoughts (e.g. searching for content pertinent to happiness) and the monitoring process searches for negative thoughts that would lead to unhappiness. The distraction attempts of the operating process are less effective when mental capacity is taxed whereby the monitoring process continues to highlight the presence of unwanted, negative, thoughts and an ironic negative cycle ensues. Attempts to suppress unwanted, negative thoughts are effortful, thereby further taxing the individual and interfering with the operating process and the search for positive thoughts. Hence, the monitoring process in depressed individuals is combined with enhanced negative thoughts, symptomatic of the condition, and diminished cognitive resources that render suppression ineffective and self-defeating. In line with this theory, we suggest suppression of memory would exacerbate depressive symptoms.

Many analytical practitioners report joining law enforcement to help people in society (Duran & Woodham, 2022) suggesting that they believe, through their work, they can be agents for justice and good. According to the just-world theory, some people believe that the world is a just place and people get what they deserve – good things happen to good people and bad things happen to bad people (Dalbert, 2009; Lerner, 1980). Measures such as the Belief in a Just World scale (Dalbert, 1999) measure how much a person subscribes to this belief. Previous literature shows that those with strong belief in a just world have lower levels of depression (Carifio & Nasser, 2012). On the contrary, some studies indicate that greater belief in a just world could be problematic if a person is confronted with regular evidence of injustices (Hafer & Sutton, 2016; Sutton & Winnard, 2007). Research explaining vicarious trauma suggests cognitive schemas (e.g. beliefs) about self and the world may have subtle or shocking changes (lack of safety, powerlessness, and distrust) when working with trauma. The extent of these disruptions partly depends upon the person's existing schema (McCann & Pearlman, 1992).

Related specifically to analytical practitioners working daily with aversive material, Woodhams and Duran argue that the constant exposure to details of disturbing crimes, confronts practitioners with the reality that bad things do happen to good people and that bad deeds do go unpunished, leading to experiences of injustice, helplessness (a symptom of depression) and, ultimately, psychological distress. Thus, we propose that belief in a just world could be a risk factor for depressive symptoms.

In a previous interview study (Duran & Woodhams, 2022) with 40 international analytical practitioners, their responses also imply that the medium of exposure, mental imagery, thought suppression and belief in just world could be potential risk factors for psychological distress. Therefore, based on our theoretical arguments and qualitative research findings, we aimed to advance our knowledge of how specified individual and work-related characteristics could act as risk factors for depressive symptoms in these roles.

1. Method

1.1. Participants and procedure

Overall, our goal was to administer questionnaires to 200 full-time analysts and secondary investigators via online survey. The inclusion criterion was they should be exposed to the traumatic experiences of other people via crime material (e.g. victim interviews, footage/images of crimes), on a daily basis, as a part of their job. The details of crimes they were exposed to

were rape, homicide, arson, extortion, child sexual abuse, genocide and acts of terrorism. Purposive sampling was used to recruit these practitioners from police and law enforcement organizations from different countries. Despite being placed in different countries, their roles were reasonably equivalent across jurisdictions.

All participants were recruited via their employer by sending an invitation email with a link to the online survey. The response rate was 99 analytical practitioners (Male = 25.3%, Female = 74.7%). Their ages ranged from 22 to 63 years ($M = 34.96$, $SD = 9.89$). 53 participants were single, 37 married and 9 were divorced. Their length of operational service ranged from 8 months to 27 years ($M = 7.11$, $SD = 6.42$) and their dosage of exposure to material depended on their working hours (35–50 h a week excluding overtime). Job titles are not specified to avoid the identification of specific units from this information which would compromise the anonymity of our participants and thus breach our ethical approval.

Ethical approval for the study was obtained from the University of Birmingham and the participants' employing organizations. The estimated sample size by G*Power 3.1.9.4 (Faul et al., 2009) was 74 analytical practitioners. Prior to completing the on-line survey, the participant information sheet was tailored to each organization. This included the details of each organization's well-being service. Local external sources of support were also included in case these were preferred and so participants could seek help immediately, if required. They were also informed that their responses would be kept confidential, and they were assured anonymity. To ensure this, none of the employers had access to any survey data and the results were aggregated *across* employers so the results of one organization could not be disaggregated from the others. Finally, post-completion of the survey, the respondents were given a two-week cooling off period to withdraw from the study if they wished.

1.2. Measures

A short, bespoke questionnaire at the start of the test battery was included to assess years of experience working in their current role, their current job title, age, gender, marital status, previous exposure to traumatic experiences, and the dosage of exposure to traumatic material across a typical week.

Medium of exposure to traumatic material was measured using three single items whereby participants were asked if they were exposed to violent/distressing material at work, 1) only visually, 2) only through auditory means, or 3) via both auditory and visual means together.

Depression symptoms were measured using the Beck Depression Inventory (BDI- II; Beck et al.,

1996). It consisted of 21 items where a response is given to each item on a 4-point scale ('0, symptoms is not present' to '3, symptom is very intense'). The BDI scores range from 0 to 63 where 0–13 reflect minimal depression symptoms, 14–19 is mild, 20–28 is moderate and 29–63 is severe. A score of higher than 19 was considered as a cut-off score for clinical levels of depression symptoms. Cronbach's α was 0.92.

Mental imagery was measured using the Plymouth Sensory Imagery Questionnaire (PSI-Q, Andrade et al., 2014). It consisted of 35 items assessing the vividness of mental imagery across seven sensory modalities (appearance, sound, smell, taste, touching, feeling and bodily sensation). The participant is asked to use each modality and rate the vividness of the result on a 10-point scale from '0 (no image at all)' to '10 (image as clear and vivid as real life)' and the Cronbach's α was 0.97. For example, 'imagine the smell of a rose.'

Thought suppression was measured using seven items from the White Bear Suppression Inventory (WBSI, Wegner & Zanakos, 1994) having a Cronbach's α 0.95. Responses are given to each item on a 5-point Likert scale ('1, strongly disagree' to '5, strongly agree').

Belief in just world was measured using the Belief in Just World Scale (BJWS, Dalbert, 1999), which is a 6-item measure that assesses beliefs regarding whether the world is just. The Cronbach's α for this measure was 0.66, which is acceptable (Kline, 1999; Taber, 2018).

1.3. Statistical analysis

Prior to the analysis, the data were examined for normality and multi-collinearity to ensure the assumptions for running the multiple regression were met. The predictor variables were (a) medium of exposure to traumatic material (visual, auditory, or both), (b) mental imagery score, (c) thought suppression score, and (d) belief in just world score. The outcome variable was the score on the BDI. The scores on the BDI were treated as a continuous variable (rather than creating a categorical variable) as the focus of our work is not on potential risk factors for clinical depression but for depressive symptoms. Further, creating a categorical variable from the BDI scores would reduce the power of the measure. Other studies have also analysed BDI scores as a continuous variable (Kung et al., 2013; Morina et al., 2013; Steer et al., 1992).

First, we conducted a correlation analysis to assess how the variables were associated with one another and the direction of relationships. Second, we conducted a hierarchical linear regression where control variables were entered at step one (age, gender, marital status, previous exposure to traumatic experiences,

years of experience working in current roles, and the dosage of exposure to traumatic material across a typical week) because empirical studies have found associations between these variables and depression (Lavis, 2012; Duran & Woodham, 2022). The six predictor variables were entered at step two. All analyses were performed using IBM's SPSS version 29.

2. Results

For each variable, the mean, standard deviation and correlations with other variables were calculated (see Table 1). The mean BDI score of 26.93 falls within the range for moderate depression (Beck et al., 1996). When categorizing each participant into mild, moderate or severe depression, 2% reported mild depression, 52% reported moderate depression, and 37% had severe depression.

Depressive symptoms were positively correlated with vividness for mental imagery, thought suppression, belief in just world and medium of exposure via audio and video together. However, the medium of exposure to traumatic material when solely visual and solely auditory were not significantly associated with depressive symptoms. All the significant correlations were in the expected directions.

A regression analysis was undertaken to establish the significance of individual characteristics in relation to predicting depression. Table 2 shows the model to be a significant predictor of depression (see Table 2). In step 1, analysts having previous experience of working in these roles predicted depression. After

controlling for the confounding variables (including previous experience), analytical practitioners who reported depressive symptoms reported being exposed to traumatic material via both audio and video modalities ($\beta = .20, p = .02$), having clear vivid imagery ($\beta = .25, p = .01$), suppressing intrusive thoughts ($\beta = .37, p < .001$), and had high belief in the just world ($\beta = .21, p = .01$). The model explained 46.3% of variance in depression (see Table 2). Thus, all the variables were significant predictors of depressive symptoms excluding solely visual and solely auditory exposure to traumatic material.

3. Discussion

To date, no research has examined the occurrence of depressive symptoms in analytical practitioners where their job requires them to regularly work with material depicting the traumatic experiences of other people. From our findings, it is evident that this group of practitioners, alike police officers, are showing depression symptoms (Stevellink et al., 2020). However, a major limitation of this paper is that we could not draw causal conclusions for the identified risk factors, but this could be (dis)confirmed in future longitudinal/experimental studies. Since the majority of the sample reported moderate or severe levels of depression, this indicates that additional mental health support is needed and analytical practitioners should be encouraged to seek professional help in a timely manner, as required. Duran & Woodham (2022) have recommended that a clinical psychologist should

Table 1. Descriptive statistics and intercorrelations between depression and predictor variables ($N = 99$).

Variable	Mean	SD	1	2	3	4	5	6	7
1. Depressive symptoms	26.93	7.95	1	.10	-.07	.29*	.34**	.41**	.34**
2. Auditory	.14	0.35		1	.39**	-.00	-.06	.03	.06
3. Visual	1.35	0.74			1	.12	-.02	.00	-.03
4. Audio and visual	0.64	0.48				1	-.04	.22*	.15
5. Mental imagery	8.50	1.49					1	.07	.17
6. Suppression	2.60	.84						1	-.04
7. Belief in just world	3.76	.73							1

* $p < .05$; ** $p < .01$

Table 2. Hierarchical Multiple Regression Predicting Depressive symptoms.

		Depressive symptoms		95%CI		R	R^2_{adj}	F
Step	Variable (s)	B	β	LL	UL			
1	Age	.00	.01	-.159	.169	.32	.04	1.81
	Gender	2.97	.16	-.788	6.735			
	Marital status	1.49	.20	-.024	3.018			
	Tenure at work	.12	.09	-.129	.369			
	Dosage	.72	.09	-.868	2.324			
2	Previous experience	3.77*	.20*	.052	7.498	.68***	.38***	6.11***
	Auditory and video	3.35*	.20*	.539	6.177			
	Auditory only	2.63	.11	-1.806	7.072			
	Visual only	-1.42	-.13	-3.459	.604			
	Mental imagery	1.34**	.25**	.399	2.292			
	Thought suppression	3.47***	.37***	1.805	5.139			
	Belief in just world	2.31**	.21**	.427	4.184			

* $p < .05$; ** $p < .01$; *** $p < .001$.

actively monitor analytical practitioners who are regularly exposed to traumatic content. Further, the World Health Organization (WHO), American Psychological Association (APA) and NICE all recommend that staff exposed to trauma should have access to trauma specialist counselling [e.g. Trauma Focused – Cognitive Behaviour Therapy (CBT) and Eye Movement Desensitization and Reprocessing (EMDR)].

Further, we have identified modifiable factors that could reduce risk of depression through preventative interventions (Wild et al., 2020). For example, it was evident that practitioners exposed to traumatic material via auditory and visual means together (e.g. watching and listening to CCTV videos or victims' police interviews, etc.) reported high levels of depressive symptoms as those exposure via other means, namely via auditory means solely or visual means solely. If confirmed via a longitudinal/experimental design, this could be combated or minimized by using one modality at a time (e.g. turning off the sound while viewing the visuals), minimizing the size of the screen, lowering the sound, or reducing the colour vibrancy by switching the colour to black and white. The practitioner could take notes to avoid repeated exposure to the distressing content (e.g. having to re-watch), and technology can be used to reduce exposure to at least part of the material that is relevant to the task (e.g. see Sanchez et al. (2019) for details on artificial intelligence and filtering/safe-viewing techniques). In addition, distraction files consisting of pleasant images (nature or animal screenshots) could be used to disrupt how the content is encoded in the memory. At present, these suggestions remain untested; therefore, if confirmed via experimental/longitudinal design, these proposed interventions require rigorous evaluation with this group of practitioners prior to widespread implementation.

Our initial findings of the potential role of vivid mental imagery in contributing to depressive symptoms could be explained should depressed analytical practitioners working with other people's trauma form vivid mental imagery related to the trauma, which is associated with their own personal lives. However, the exact mechanisms for harm here require further investigation. Potential forms of intervention if mental imagery was confirmed as a risk factor via experimental/longitudinal design include imagery re-scripting interventions which are used in cognitive behavioural therapies for depression (Holmes et al., 2007) to promote positive imagery of the future to combat distressing, intrusive imagery. For example, individuals with depression can have flash-forwards to imagined future suicide attempts, or interpersonal problems like isolation and victimization (Crane et al., 2012; Holmes et al., 2007). Imagery re-scripting could help change pre-existing

negative mental imagery (e.g. isolation, feeling helpless, low mood) to more benign imagery to promote positive emotions, or by creating a new positive image to rescript negative schematic beliefs that occur repeatedly.

In addition, we found thought suppression as a potential risk factor of depression. This finding is consistent with the Ironic Process Theory (Beevers et al., 1999) and previous literature where depressed individuals suppressing their thoughts tend to have worsening depression symptoms (Miller et al., 2019; Wenzlaff et al., 2001). Again, this requires confirmation via an experimental/longitudinal design. If confirmed, thought suppression could be addressed via cognitive therapy whereby individuals with depressive symptoms are taught to accept unwanted thoughts and feelings without evaluating or passing judgement or trying to get rid of them (Hayes et al., 1994). This therapy could promote more adaptive coping mechanisms because it can amend the ironic effects of thought suppression through greater mental control. Another evaluated alternative strategy to address thought suppression could be mindfulness where an individual showing depressive symptoms learns not to suppress negative thoughts but focus on calmness, clarity and stability of mind through meditation (Teasdale et al., 2000). Line managers could educate their team on adaptive and maladaptive coping strategies (e.g. thought suppression).

Finally, we found analytical practitioners with a stronger belief in a just world to be more depressed. This finding opposes previous literature (Lerner, 1980; Carifio & Nasser, 2012) but is in line with other studies (Hafer & Sutton, 2016). Analysts have commented in interviews (Duran & Woodhams, 2023) that they rarely get feedback on the outcomes of their analysis. Were this finding repeated but with an experimental/longitudinal design, erosion of their belief in a just world could be addressed by employers feeding back positive results where they occur and helping them see that the achievement of a conviction is not the only positive outcome, but that a victim being believed or their analytical work being used to further a police investigation is also justice in a sense (Duran & Woodham, 2022). Further, increased awareness on engaging in distorted beliefs and tackling a fundamental belief in justice through compassion-focused therapy could help analytical practitioners' to be more compassionate towards oneself and others (Beaumont & Hollins Martin, 2015; Maidenberg, 2019).

There is strong evidence from research with front-line police officers, military personnel that mental health stigma and worries about career progression and confidentiality delay help seeking for mental health problems (Duran et al., 2019). Therefore, these concerns should be considered when developing

intervention strategies for this group of practitioners as well (Haugen et al., 2017; Jones et al., 2015).

There were a few limitations to this study. First, this study was cross-sectional in nature; therefore, it could not establish cause-and-effect relationships, which could only be identified via a longitudinal study as already mentioned. Second, all the participants volunteered to participate in this study and, therefore, people concerned about mental health issues might be more likely to participate. Conversely, some analysts might have given socially desirable responses due to the police culture of mental health stigmatization; thus, underplaying their distress. Third, analytical practitioners from different police and law enforcement organizations participated and to adhere with our ethical approval, it was not possible for us to investigate the differences across organizations without compromising the anonymity of participants. We cannot therefore comment on how differences in the work of units or their organizational structure might affect the results. Besides these limitations, this was the first international survey study with analytical practitioners to investigate the relationships between individual characteristics and risk factors for depressive symptoms and this paper has highlighted that analytical practitioners are at risk of depressive symptoms and are in need of intervention.

4. Conclusion

This study aimed to examine the relationships between depressive symptoms and individual/workplace characteristics that have been identified as potential modifiable risk factors when working with aversive crime material. We found practitioners with higher levels of depression to report a propensity for vivid mental imagery, that they suppressed intrusive thoughts, were exposed to traumatic content via both audio and visual means, and had a stronger belief in the world being just. These findings were produced with a sample of analytical practitioners working in law enforcement and policing but would also be relevant to those working with similar content in industry or third-sector settings.

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Data availability

Due to the legal restrictions and sensitive nature of the research, the supporting data is not available.

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References

- Andrade, J., May, J., Deeprose, C., Baugh, S. J., & Ganis, G. (2014). Assessing vividness of mental imagery: The plymouth sensory imagery questionnaire. *British Journal of Psychology*, 105(4), 547–563. <https://doi.org/10.1111/bjop.12050>
- Beaumont, E., & Hollins Martin, C. J. (2015). A narrative review exploring the effectiveness of compassion-focused therapy. *Counselling Psychology Review*, 30(1), 21–32. <https://doi.org/10.53841/bpscr.2015.30.1.21>
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. International Universities Press.
- Beck, A. T., Steer, R. A., & Brown, G. (1996). *Beck Depression Inventory-II (BDI-II)* [Database record]. APA PsycTests. <https://doi.org/10.1037/t00742-000>.
- Beevers, C. G., Wenzlaff, R. M., Hayes, A. M., & Scott, W. D. (1999). Depression and the ironic effects of thought suppression: Therapeutic strategies for improving mental control. *Clinical Psychology: Science and Practice*, 6(2), 133–148. <https://doi.org/10.1093/clipsy.6.2.133>
- Beevers, C., & Meyer, B. (2004). BRIEF REPORT thought suppression and depression risk. *Cognition and Emotion*, 18(6), 859–867. <https://doi.org/10.1080/02699930341000220>
- Brewin, C. R., Miller, J. K., Soffia, M., Peart, A., & Burchell, B. (2022). Posttraumatic stress disorder and complex posttraumatic stress disorder in UK police officers. *Psychological Medicine*, 52(7), 1287–1295. <https://doi.org/10.1017/S0033291720003025>
- Carifio, J., & Nasser, R. (2012). Belief in a just world and depression in elderly nursing home residents. *Work*, 43(3), 303–312. <https://doi.org/10.3233/WOR-2012-1371>
- Collins, P. A., & Gibbs, A. C. (2003). Stress in police officers: A study of the origins, prevalence and severity of stress-related symptoms within a county police force. *Occupational Medicine*, 53(4), 256–264. <https://doi.org/10.1093/occmed/kqg061>
- Crane, C., Shah, D., Barnhofer, T., & Holmes, E. A. (2012). Suicidal imagery in a previously depressed community sample. *Clinical Psychology & Psychotherapy*, 19(1), 57–69. <https://doi.org/10.1002/cpp.741>
- Craske, M. G., Rauch, S. L., Ursano, R., Prenoveau, J., Pine, D. S., & Zinbarg, R. E. (2009). What is an anxiety disorder? *Depression and Anxiety*, 26(12), 1066–1085. <https://doi.org/10.1002/da.20633>
- Dalbert, C. (1999). The world is more just for me than generally: About the personal belief in a just world scale's validity. *Social Justice Research*, 12(2), 79–98. <https://doi.org/10.1023/A:1022091609047>
- Dalbert, C. (2009). Belief in a just world. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 288–297). The Guilford Press.
- Davies, L. E., Brooks, M., & Braithwaite, E. C. (2022). Compassion fatigue, compassion satisfaction, and burnout, and their associations with anxiety and depression in UK police officers: A mixed method analysis. *The Police Journal*, 96(3), 509–529. <https://doi.org/10.1177/0032258X221106107>
- Duran, F., & Woodhams, J. (2022). Impact of traumatic material on professionals in analytical and secondary investigative roles working in criminal justice settings: A qualitative approach. *Journal of Police Criminal Psychology*, 37(4), 904–917. <https://doi.org/10.1007/s11896-022-09532-8>

- Duran, F., & Woodhams, J. (2023). Impact of the current pandemic on intelligence and analytical professionals working in police and law enforcement organizations. *Psychological Trauma: Theory, Research, Practice, and Policy*, Advance online publication. <https://doi.org/10.1037/tra0001221>
- Duran, F., Woodhams, J., & Bishopp, D. (2019). An interview study of the experiences of police officers in regard to psychological contract and well-being. *Journal of Police and Criminal Psychology*, 34(2), 184–198. <https://doi.org/10.1007/s11896-018-9275-z>
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of post-traumatic stress disorder. *Behaviour Research and Therapy*, 38(4), 319–345. [https://doi.org/10.1016/S0005-7967\(99\)00123-0](https://doi.org/10.1016/S0005-7967(99)00123-0)
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41, 1149–1160.
- Gotlib, I. H., & Joormann, J. (2010). Cognition and depression: Current status and future directions. *Annual Review of Clinical Psychology*, 6(1), 285–312. <https://doi.org/10.1146/annurev.clinpsy.121208.131305>
- Hafer, C. L., & Sutton, R. (2016). Belief in a just world. *Handbook of Social Justice Theory and Research*, 145–160. https://doi.org/10.1007/978-1-4939-3216-0_8
- Haugen, P. T., McCrillis, A. M., Smid, G. E., & Nijdam, M. J. (2017). Mental health stigma and barriers to mental health care for first responders: A systematic review and meta-analysis. *Journal of Psychiatric Research*, 94, 218–229. <https://doi.org/10.1016/j.jpsychires.2017.08.001>
- Hayes, S. C., Jacobson, N. S., Follette, V. M., & Dougher, M. J. (1994). *Acceptance and change: Content and context in psychotherapy*. Context Press.
- Holmes, E. A., Lang, T. J., & Deeprose, C. (2009). Mental imagery and emotion in treatment across disorders: Using the example of depression *Cognitive Behaviour Therapy*, 38(S1), 21–28.
- Holmes, E. A., Crane, C., Fennell, M. J., & Williams, J. M. (2007). Imagery about suicide in depression—"Flash-forwards"? *Journal of Behavior Therapy and Experimental Psychiatry*, 38(4), 423–434. <https://doi.org/10.1016/j.jbtep.2007.10.004>
- Jones, N., Keeling, M., Thandi, G., & Greenberg, N. (2015). Stigmatisation, perceived barriers to care, help seeking and the mental health of British Military personnel. *Social Psychiatry and Psychiatric Epidemiology*, 50(12), 1873–1883. <https://doi.org/10.1007/s00127-015-1118-y>
- Kindermann, K., Sanzenbacher, M., Nagy, E., Greinacher, A., Cranz, A., Nikendei, A., Friederich, H. C., & Nikendei, C. (2020). Prevalence and risk factors of secondary traumatic stress in emergency call-takers and dispatchers – a cross-sectional study. *European Journal of Psychotraumatology*, 11(1), <https://doi.org/10.1080/20008198.2020.1799478>
- Kline, N. (1999). *Time to think: Listening to ignite the human mind*. Hachette UK.
- Kosslyn, S. M. (2005). Reflective thinking and mental imagery: A perspective on the development of posttraumatic stress disorder. *Development and Psychopathology*, 17(3), 851–863. <https://doi.org/10.1017/S0954579405050406>
- Kung, S., Alarcon, R. D., Williams, M. D., Poppe, K. A., Jo Moore, M., & Frye, M. A. (2013). Comparing the Beck Depression Inventory-II (BDI-II) and Patient Health Questionnaire (PHQ-9) depression measures in an integrated mood disorders practice. *Journal of Affective Disorders*, 145(3), 341–343. <https://doi.org/10.1016/j.jad.2012.08.017>
- Lavis, T. (2012). *Exploring how crime analysts experience working with other people's traumatic material* (Doctoral dissertation, University of Birmingham). <http://etheses.bham.ac.uk/3745/1/Lavis12ForenPsyD.pdf>
- Lerner, M. J. (1980). *The belief in a just world* (pp. 9–30). Springer.
- Maidenberg, E. (2019). The Psychological Consequences of Believing in a Just World. <https://www.psychologytoday.com/gb/blog/belief-and-the-brain/201909/the-psychological-consequences-believing-in-just-world>
- Mastroberardino, S., Santangelo, V., Botta, F., Marucci, F. S., & Olivetti Belardinelli, M. (2008). How the bimodal format of presentation affects working memory: An overview. *Cognitive Processing*, 9(1), 69–76. <https://doi.org/10.1007/s10339-007-0195-6>
- McCann, I. L., & Pearlman, L. A. (1992). Constructivist self-development theory: A theoretical framework for assessing and treating traumatized college students. *Journal of American College Health*, 40(4), 189–196. <https://doi.org/10.1080/07448481.1992.9936281>
- Miller, M. B., Metrik, J., Borsari, B., & Jackson, K. M. (2019). Longitudinal associations between sleep, intrusive thoughts, and alcohol problems among veterans. *Alcoholism: Clinical and Experimental Research*, 43(11), 2438–2445. <https://doi.org/10.1111/acer.14191>
- Morina, N., Leibold, E., & Ehring, T. (2013). Vividness of general mental imagery is associated with the occurrence of intrusive memories. *Journal of Behavior Therapy and Experimental Psychiatry*, 44(2), 221–226. <https://doi.org/10.1016/j.jbtep.2012.11.004>
- New Zealand Police. (2022). *Trauma support policy- Police Manual Chapter*. <https://www.police.govt.nz/about-us/publication/trauma-support-policy-police-manual-chapter>
- Paivio, A. (1986). *Mental representations: A dual coding approach*. Oxford University Press.
- Saakvitne, K. W., Pearlman, L. A., & Traumatic Stress Inst, Ctr for Adult & Adolescent Psychotherapy, LLC. (1996). *Transforming the pain: A workbook on vicarious traumatization*. W W Norton & Co.
- Sanchez, L., Grajeda, C., Baggili, I., & Hall, C. (2019). A practitioner survey exploring the value of forensic tools, AI, filtering, & safer presentation for Investigating Child Sexual Abuse Material (CSAM). *Digital Investigation*, 29, S124–S142. <https://doi.org/10.1016/j.diin.2019.04.005>
- Steer, R. A., Scholl, T. O., Hediger, M. L., & Fischer, R. L. (1992). Self-reported depression and negative pregnancy outcomes. *Journal of Clinical Epidemiology*, 45(10), 1093–1099. [https://doi.org/10.1016/0895-4356\(92\)90149-h](https://doi.org/10.1016/0895-4356(92)90149-h)
- Stevellink, S. A. M., Pernet, D., Dregan, A., Davis, K., Walker-Bone, K., Fear, N. T., & Hotopf, M. (2020). The mental health of emergency services personnel in the UK Biobank: A comparison with the working population. *European Journal of Psychotraumatology*, 11(1), 1799477. <https://doi.org/10.1080/20008198.2020.1799477>
- Sutton, R. M., & Winnard, E. J. (2007). Looking ahead through lenses of justice: The relevance of just-world beliefs to intentions and confidence in the future. *British Journal of Social Psychology*, 46(3), 649–666. <https://doi.org/10.1348/014466606X166220>
- Taber, K. S. (2018). The use of Cronbach's Alpha when developing and reporting research instruments in science education. *Research Science Education*, 48(6), 1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Teasdale, J. D., Segal, Z. V., Williams, J. M. G., Ridgeway, V. A., Soulsby, J. M., & Lau, M. A. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and*

- Clinical Psychology*, 68(4), 615–623. <https://doi.org/10.1037/0022-006X.68.4.615>
- Violanti, J. M., Burchfiel, C. M., Miller, D. B., Andrew, M. E., Dorn, J., Wactawski-Wende, J., Beighley, C. M., Pierino, K., Joseph, P. N., Vena, J. E., Sharp, D. S., & Trevisan, M. (2006). The Buffalo Cardio-Metabolic Occupational Police Stress (BCOPS) pilot study: Methods and participant characteristics. *Annals of Epidemiology*, 16(2), 148–156. <https://doi.org/10.1016/j.annepidem.2005.07.054>
- Wagner, S. L., White, N., Fyfe, T., Matthews, L. R., Randall, C., Regehr, C., White, M., Alden, L. E., Buys, N., Carey, M. G., Corneil, W., Fraess-Phillips, A., Krutop, E., & Fleischmann, M. H. (2020). Systematic review of post-traumatic stress disorder in police officers following routine work-related critical incident exposure. *American Journal of Industrial Medicine*, 63(7), 600–615. <https://doi.org/10.1002/ajim.23120>
- Wegner, D. M., & Zanakos, S. (1994). Chronic thought suppression. *Journal of Personality*, 62(4), 615–640. <https://doi.org/10.1111/j.1467-6494.1994.tb00311.x>
- Wenzlaff, R. M., & Luxton, D. D. (2003). The role of thought suppression in depressive rumination. *Cognitive Therapy and Research*, 27(3), 293–308. <https://doi.org/10.1023/A:1023966400540>
- Wenzlaff, R. M., Rude, S. S., Taylor, C. J., Stultz, C. H., & Sweatt, R. A. (2001). Beneath the veil of thought suppression: Attentional bias and depression risk. *Cognition and Emotion*, 15(4), 435–452. <https://doi.org/10.1080/0269993004200169>
- Wild, J., El-Salahi, S., & Degli Esposti, M. (2020). *The effectiveness of interventions aimed at improving well-being and resilience to stress in first responders*. European Psychologist
- Wortley, R., Smallbone, S., Powell, M., & Cassematis, P. (2014). Understanding and managing the occupational health impacts on investigators of internet child exploitation. https://discovery.ucl.ac.uk/id/eprint/1447785/1/Wortley_Understanding%20and%20Managing%20the%20Occupational%20Health%20Impacts%20on%20Investigators%20of%20Internet%20Child%20Exploitation.pdf