



Impacts of trauma-informed practice training for professionals working in multiple sectors delivered in two regions of the United Kingdom

Charley Wilson¹ · Nadia Butler¹ · Zara Quigg¹ · Ann-Marie Farrugia¹

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Abstract

Aim This study aims to add to the growing evidence base on trauma-informed practice training, examining the impacts of five training programmes delivered to a range of professionals. The study also explores whether the impacts of the training programmes differ by mode of delivery, and whether there are differences in baseline trauma-informed knowledge and attitudes by sociodemographic factors.

Subject and methods Across each of five trauma-informed practice training programmes, participants completed baseline and post-training surveys, including measures on sociodemographic characteristics and trauma-informed knowledge and attitudes, utilising two of the five subscales of the Survey for Trauma-Informed Systems Change.

Results Analyses indicated baseline differences in individual-level and system-wide trauma-informed knowledge and attitudes by participant sociodemographic factors—particularly by years of working experience and organisation type. All training programmes, including one tailored towards leadership staff, showed significant improvements from baseline to post-training in participants' trauma-informed knowledge and attitudes; however, some of the training programmes had significantly more positive levels of impact than others.

Conclusion This study suggests that while a suite of different trauma-informed training programmes are effective in improving multi-agency trainees' trauma-informed knowledge and attitudes, training programmes with certain delivery methods may be more impactful than others. The study also found that there may be important sociodemographic differences in individuals' baseline levels of trauma-informed knowledge and attitudes. Findings may have implications in terms of how best to deliver trauma-informed training programmes, where best to target resources to improve trauma-informed practices, and developing collaborative multi-agency approaches towards trauma-informed working.

Keywords Adverse childhood experiences · Trauma-informed practice · Trauma-informed care · Trauma-informed training

Introduction

Adverse childhood experiences (ACEs) refer to events and situations in childhood that can lead to long-term stress and trauma. ACEs can include, but are not limited to, physical, verbal, or sexual abuse, physical or emotional neglect, household-level stressors such as a household member experiencing harms related to alcohol, drugs, or gambling, being

incarcerated, or witnessing violence in the household, and community-level stressors such as bullying or witnessing violence in the community (Afifi et al. 2020; Bellis et al. 2023a, 2023b). Strong evidence from the UK and internationally indicates that cumulative experiences of ACEs can heighten the risk of individuals experiencing poor health, well-being, and social outcomes across the life course (Bellis et al. 2023a, 2023b). Evidence suggests that compared to those with no ACEs, individuals who experience a greater number of ACEs are more likely to have worse mental health outcomes, engage in health risk behaviours, have higher risk of non-communicable diseases (e.g. cardiovascular disease, cancers, diabetes), and be a victim of or perpetrate violence (Bellis et al. 2014, 2023a, 2023b; Butler et al. 2020; Hughes et al. 2017; Merrick et al. 2019). Research also indicates a

✉ Charley Wilson
c.wilson@ljamu.ac.uk

¹ School of Public and Allied Health/Public Health Institute, Liverpool John Moores University, Tithebarn Building, 79 Tithebarn Street, Liverpool L2 2ER, UK

heightened risk of experiencing poor outcomes in adulthood even amongst those who experience only one ACE, compared to those experiencing no ACEs (Bellis et al. 2023b; Quigg et al. 2025). ACEs may therefore be a key factor contributing to the development of health and social inequalities amongst groups who experience ACEs at a higher prevalence than their peers (Lacey et al. 2020; Walsh et al. 2019; Wilson et al. 2024).

Critically, the harmful impacts which ACEs can have do not manifest only at the individual level. There are also significant societal-level costs to criminal and youth justice, education, and health and social care systems (Bellis et al. 2023a, 2023b). Evidence suggests that those who have heightened experiences of ACEs may be more likely to come into contact with various services across the life course (e.g. healthcare, criminal and youth justice systems; Bellis et al. 2017; Chartier et al. 2010; Ford et al. 2019; Graf et al. 2021; McCoy et al. 2023). Therefore, this could offer professionals working across a number of different services and systems an opportunity to intervene and mitigate the impacts of ACEs by offering appropriate support and enhancing the role of resilience in individuals' lives (Bellis et al. 2023a, 2023b; Hughes et al. 2018; Purewal Boparai et al. 2018; Quigg et al. 2025). However, evidence also suggests that individuals who have experienced ACEs are more likely to experience poorer outcomes or difficulties in engagement with services than individuals who experienced no ACEs (Bellis et al. 2024; Borysik and Corry-Roake 2021; Ford et al. 2024; Lester et al. 2020). For example, young people who have early experiences of ACEs are more likely to be excluded from school, which evidence suggests may increase the risk of criminal exploitation and offending outcomes (Pierce et al. 2022). Qualitative evidence from the UK also indicates that when individuals who have experienced ACEs have repeated interactions with the police, these encounters can trigger experiences of re-traumatisation, resulting in reduced trust in police services (Borysik and Corry-Roake 2021). Recent evidence also shows that compared to those who experienced no ACEs, those who experienced four or more ACEs are more likely to have low trust in the advice they receive from a range of different healthcare professionals, lower levels of comfort when engaging with services, and lower trust in healthcare, social, and police services more broadly (Bellis et al. 2024; Ford et al. 2024). However, a systematic review study of young people impacted by ACEs demonstrated that several factors can support their development of trust and confidence in services, and increase their sense of autonomy and control (Lester et al. 2020). These factors included supportive, flexible, and dependable relationships built with adults over a longer time period, and sensitivity, empathy, and a non-judgemental approach from professionals (Lester et al. 2020). Thus, there is growing recognition of the need for services and professionals to adapt and develop

their practices and approaches to work more safely and effectively with individuals who have experienced ACEs in order to mitigate the impacts which ACEs can have.

One way in which services aim to respond to the needs of individuals who have experienced ACEs is by integrating trauma-informed approaches into their practices. Principles of trauma-informed practice include acknowledgement of the impacts of trauma and the potential pathways to recovery; being able to recognise the signs and symptoms of trauma; integration of knowledge on trauma into organisational-level policies and practices; prioritising safety, choice, empowerment, and establishing trust when working with individuals; and implementing practices to prevent re-traumatisation (Bellis et al. 2023a, 2023b; DeCandia and Guarino 2020; SAMHSA 2014; Tebes et al. 2019). Evidence suggests that when systems/organisations follow trauma-informed principles and have practitioners with high levels of knowledge about ACEs, it may improve opportunities for early intervention, helping to more appropriately target support (Bateson et al. 2019; Bellis et al. 2023a, 2023b; Quigg et al. 2023). In turn, this may promote outcomes which help to prevent longer-term poor health and social outcomes for individuals who have experienced ACEs (Bateson et al. 2019; Bellis et al. 2023a, 2023b; Quigg et al. 2023). Training for staff to improve their trauma-informed knowledge and attitudes, and confidence to work in line with trauma-informed principles, is therefore a crucial initial step for organisations in offering more trauma-informed service provision to those they come into contact with.

Internationally and in the UK, there is a limited evidence base examining the impacts of trauma-informed training programmes on trainees' trauma-informed knowledge and attitudes. The available evidence suggests that trauma-informed training programmes can improve trainees' understanding of ACEs and their confidence to work with people who have experienced ACEs, particularly for trainees from policing or criminal justice backgrounds (Barton et al. 2018; Beer et al. 2020; Bellis et al. 2023a, 2023b; Brodie et al. 2023; Glendinning et al. 2020; Hardcastle and Bellis 2021; Lathan et al. 2019; Olson et al. 2022; Pepa et al. 2025; Quigg et al. 2024). However, the extent to which improvements in knowledge and attitudes are maintained in training sessions delivered to individuals from a wider range of professional backgrounds is not well evidenced. Further, the impacts of such training on organisational leaders and managers have not been examined. Leadership staff are an important group to target with trauma-informed training programmes, as this group may be better placed to implement organisational-level changes to improve trauma-informed knowledge and attitudes, including how well organisations can respond to staff's well-being, including the impacts of their own ACEs, burnout, and vicarious trauma. There is also very little evidence exploring whether there are differences across

different sociodemographic groups in baseline levels of trauma-informed knowledge and attitudes. Exploring this may help to better target trauma-informed training to the groups of professionals that may stand to benefit most.

Aims

This study aims to add to the growing evidence base on trauma-informed training, by examining the impacts of five training programmes delivered to a range of professionals (e.g. police/criminal justice, education, community/third-sector, healthcare). The study also aims to explore whether the impacts of the training programmes differ by mode of delivery and whether there are differences in baseline trauma-informed knowledge and attitudes by sociodemographic factors.

Methods

Description of the trauma-informed training programmes

Five trauma-informed training programmes were delivered during 2023/2024 across two regions in the UK. Table A1 details the key features of each training programme. Training programmes 1, 2, and 3 were delivered over half a day (3 h, 30 min), training programme 4 over a full day (6 h), and training programme 5 over three consecutive full days. Training programmes 1 and 2 were delivered primarily to police force staff, while training programmes 3, 4, and 5 were delivered to multi-sectoral partners. All training programmes were delivered in person, apart from training programme 2, which was delivered online. All training programmes included content on what ACEs are, their impacts, how trauma may present/how to identify ACEs, and the key principles and benefits of trauma-informed practice. Training programmes 3, 4, and 5 included the use of a framework to help trainees implement trauma-informed approaches. Training programme 4 included additional content tailored towards organisational leaders. Training programme 5 included the development of key self-regulation skills. All training programmes had delivery of content which included

informal lecture through slideshow presentation with video aids, and all training programmes except training programme 2 included dedicated time for self-reflection and discussion with others. Training programmes 3, 4, and 5 more heavily integrated experiential learning and additionally included action planning and group-based activities, while training programme 5 also included action-based learning, including the practicing of skills.

Study design, participant recruitment, and sample

Baseline and post-training surveys were implemented across all programmes. Overall, 864 trainees attended the training programmes, and 732 (84.7%) individuals completed baseline surveys. Half (52.5%) of the individuals attending the training programmes completed both baseline and post-training surveys (Table 1).

Prior to all training sessions, trainers provided trainees with a brief verbal description of the study and access to a participant information sheet. Ethical approval was obtained from the Liverpool John Moores University research ethics committee (REC numbers 24/PHI/004, 23/PHI/018, and 20/PHI/001).

Measures

Sociodemographic characteristics

Sociodemographic factors included gender (male; female), age (18–24; 25–34; 35–44; 45–54; 55+ years), ethnicity (any White ethnic background; any non-White ethnic background), years spent working for their organisation (up to 2 years; 3–9 years; 10+ years), leadership status (leadership staff [includes those on training programme 4, those who indicated that they were a leader/manager, and those on training programmes 1 and 2 with a police rank of sergeant or above]; non-leadership staff), and organisation type (community/third-sector; policing/criminal justice; education and children's centres; healthcare and social care; and other organisation types [including local authority, other public sector, youth services, and other]).

Table 1 Training programme attendance and survey completion

	Training programme				
	1	2	3	4	5
Individuals attending the training	170	188	232	182	92
Individuals completing baseline surveys	154	171	177	138	92
Individuals completing baseline and post-training surveys	153	93	58	74	76
% of those attending who completed baseline and post-training surveys	90.0%	49.5%	25.0%	40.7%	82.6%

Survey for Trauma-Informed Systems Change (STISC)

The STISC is a validated measure of culturally responsive trauma-informed care which can be implemented with professionals across any field of work (Moreland-Capuia et al. 2022). The overall scale contains five subscales, of which two were utilised in the baseline and post-training surveys: the individual-level trauma-informed knowledge and attitudes subscale (23 items) and the system-wide trauma-informed knowledge and attitudes subscale (6 items). The other three subscales of the STISC are safety and acceptance at work (7 items); training, support, interaction, and environment (20 items); and awareness of cultural background at work (3 items). However, participants' responses to the items on these subscales could not be reasonably expected to change in the short period from baseline to post-training data collection. As a result, the current study does not examine changes in scores across these subscales. For each subscale, participants indicate on a five-point scale the extent to which they agree or disagree with each item (1 = strongly disagree; 5 = strongly agree). Item scores are totalled for each subscale, with higher scores indicating more trauma-informed knowledge and attitudes. Scores on the individual-level trauma-informed knowledge and attitudes subscale can range from 23 to 115, and scores on the system-wide subscale can range from 6 to 30. In training programmes 2, 3, 4, and 5, the wording of some items was adapted to use language which was more culturally and locally relevant as described in Quigg et al. (2024; Table A2).

Analyses

Quantitative analyses were undertaken using SPSS (v.29). Independent-samples *t*-tests were used to examine whether there were differences in baseline individual-level and system-wide trauma-informed knowledge and attitudes subscale scores by gender, ethnicity, and leadership staff status. Analysis of variance (ANOVA) tests were used to examine whether there were differences in baseline STISC subscale scores by years of working experience and the type of organisation individuals worked for. Linear regressions (enter method) were used to assess which sociodemographic variables significantly predicted baseline STISC subscale scores. Only variables with significant associations with baseline subscale scores in bivariate analyses were included in multivariate analyses.

Paired-samples *t*-tests were used to explore whether significant changes were observed from baseline to post-training in STISC subscale scores. Effect sizes using Cohen's *d* were used to indicate the size of any changes from baseline to post-training. After controlling for baseline subscale scores and sociodemographic factors (gender, ethnicity, and years of working experience), hierarchical linear regression

models (forward method) were used to determine which training programmes best predicted post-training STISC subscale scores.

Results

Participant sociodemographic characteristics

Table A3 shows the sociodemographic characteristics of survey participants at baseline. Three-quarters (74.3%; $n = 540$) of participants were female, and the majority (94.0%; $n = 691$) were White. Over a quarter (27.9%; $n = 214$) of participants were leadership staff. Four in ten (41.2%; $n = 304$) participants had over 10 years of experience working with their organisation, over a third (34.9%; $n = 257$) had between 3 and 9 years, and just under a quarter (23.9%; $n = 176$) had up to 2 years. Participants worked for different types of organisations including community/third-sector (12.8%; $n = 95$), criminal justice/policing (42.9%; $n = 319$), education and children's centres (14.9%; $n = 111$), health and social care (19.0%; $n = 141$), and other organisation types including local authority, other public sector, and youth services (10.4%; $n = 77$).

Baseline differences in individual-level trauma-informed knowledge and attitudes by sociodemographic factors

In bivariate analyses, significant associations were found between individual-level trauma-informed knowledge and attitudes subscale scores and gender ($p < 0.01$), ethnicity ($p < 0.05$), years of working experience ($p < 0.001$), and organisation type ($p < 0.001$; Table 2). Those who were female, from non-White ethnic backgrounds, had up to 2 years of working experience, and worked for community/third-sector organisations had higher mean baseline individual-level trauma-informed knowledge and attitudes subscale scores (Table 2).

In multivariate analyses, baseline individual-level trauma-informed knowledge and attitudes subscale scores were predicted by gender, ethnicity, years of working experience, and organisation type, $R^2 = 0.127$; $F(8, 650) = 11.793$, $p < 0.001$. Ethnicity, years of working experience, and organisation type each contributed significantly to the model; however, gender did not (Table A4). There were significantly higher scores amongst those from non-White ethnic backgrounds (compared to White ethnicities; $p < 0.05$), and those working in community/third-sector organisations (compared to other organisation types; $p < 0.05$; Table A4). However, there were significantly lower scores amongst those who worked in criminal justice/policing organisations (compared to other organisation types; $p < 0.001$), and those with 10+

Table 2 Differences in baseline individual-level and system-wide trauma-informed knowledge and attitudes subscale scores by sociodemographic factors

	Individual-level scores (score range, 23–115)			System-wide scores (score range, 6–30)		
	<i>n</i>	Mean (SD)	<i>p</i>	<i>n</i>	Mean (SD)	<i>p</i>
Gender						
Male	155	78.62 (12.59)		174	24.57 (4.00)	
Female	508	82.20 (13.46)	<0.01	511	24.90 (4.38)	0.382
Ethnicity						
Any White background	634	81.04 (13.16)		653	24.86 (4.24)	
Any non-White background	39	85.95 (14.09)	<0.05	41	23.98 (5.56)	0.206
Leadership staff status						
Leadership staff	182	81.32 (13.40)		184	25.48 (4.31)	
Not leadership staff	490	81.28 (13.30)	0.966	510	24.49 (4.33)	<0.01
Years of working experience						
Up to 2 years	171	85.19 (13.12)		168	25.74 (4.42)	
3–9 years	239	81.21 (12.62)		244	24.24 (4.45)	
10+ years	263	78.68 (13.57)	<0.001	286	24.68 (4.13)	<0.01
Organisation type						
Community/third-sector	91	89.12 (11.43)		87	26.45 (4.28)	
Criminal justice/policing	274	76.53 (13.09)		306	23.66 (4.03)	
Education and children's centres	105	82.24 (11.28)		104	25.19 (4.09)	
NHS/Health and social care	137	83.04 (13.63)		131	25.57 (4.73)	
Other	71	84.13 (11.99)	<0.001	73	25.37 (4.15)	<0.001

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years of working experience (compared to up to 2 years; $p < 0.05$; Table A4).

Baseline differences in system-wide trauma-informed knowledge and attitudes by sociodemographic factors

In bivariate analyses, significant associations were found between system-wide trauma-informed knowledge and attitudes subscale scores and leadership staff status ($p < 0.01$), years of working experience ($p < 0.01$), and organisation type ($p < 0.001$; Table 2). Those who were leadership staff, had up to 2 years of working experience, and worked for community/third-sector organisations had higher mean baseline system-wide trauma-informed knowledge and attitudes subscale scores (Table 2).

In multivariate analyses, baseline system-wide trauma-informed knowledge and attitudes subscale scores were predicted by staff leadership status, years of working experience, and organisation type, $R^2 = 0.072$; $F(7, 683) = 7.556$, $p < 0.001$. Years of working experience and organisation type each contributed significantly to the model; however, staff leadership status did not (Table A5). There were significantly lower scores amongst those who worked in criminal justice/policing organisations (compared to other organisation types; $p < 0.05$) and those with between 3 and 9 years

of working experience (compared to up to 2 years; $p < 0.05$; Table A5).

Impacts of training on individual-level knowledge and attitudes

In matched analyses ($n = 394$), there was a statistically significant increase in participants' individual-level trauma-informed knowledge and attitudes subscale scores from baseline (mean = 80.54; SD=12.67) to post-training (mean = 98.12; SD = 12.20; $p < 0.001$), with a large effect size [$d = 1.35$ (1.21–1.48.21.48)]. Participants in each programme individually and overall showed positive changes in individual-level trauma-informed knowledge and attitudes subscale scores from baseline to post-programme (Table 3).

In multivariate analyses, after controlling for baseline individual-level trauma-informed knowledge and attitudes subscale scores and sociodemographic factors, the model which best predicted post-training subscale scores included attendance at training programme 5 and attendance at training programme 2, which when each was added to the model significantly improved its predictive ability (Table A6). Baseline subscale scores and attendance at training programme 5 significantly increased post-training subscale scores, where an increase in baseline subscale scores by 1 increased post-training subscale scores by 0.37 ($p < 0.001$) and attendance at training programme 5 increased

Table 3 Differences in trauma-informed knowledge and attitudes subscale scores, from baseline to post-training

Training programme number	Individual-level trauma-informed knowledge and attitudes subscale scores				System-wide trauma-informed knowledge and attitudes subscale scores					
	<i>n</i>	Baseline mean (SD)	Post mean (SD)	<i>p</i>	<i>d</i>	<i>n</i>	Baseline mean (SD)	Post mean (SD)	<i>p</i>	<i>d</i>
1	107	74.11 (13.24)	95.11 (10.24)	<0.001	1.83 (1.52–2.14, 52.14)	144	24.83 (3.56)	27.15 (2.95)	<0.001	0.67 (0.49–0.85, 49.85)
2	91	78.67 (10.96)	94.32 (9.98)	<0.001	1.24 (0.97–1.52, 97.52)	91	22.84 (3.98)	24.77 (3.57)	<0.001	0.50 (0.28–0.72, 28.72)
3	56	83.34 (11.67)	99.77 (10.23)	<0.001	1.61 (1.21–2.00, 21.00)	56	25.20 (4.64)	27.89 (2.65)	<0.001	0.61 (0.32–0.89, 32.89)
4	69	85.09 (11.17)	100.58 (14.22)	<0.001	1.07 (0.78–1.37, 78.37)	68	25.74 (4.51)	27.93 (3.64)	<0.001	0.54 (0.28–0.79, 28.79)
5	71	86.01 (11.32)	103.86 (14.01)	<0.001	1.15 (0.85–1.45, 85.45)	72	26.51 (3.89)	28.10 (4.34)	<0.01	0.39 (0.14–0.62, 14.62)
Overall	394	80.54 (12.67)	98.12 (12.20)	<0.001	1.35 (1.21–1.48, 21.48)	431	24.88 (4.17)	27.02 (3.62)	<0.001	0.55 (0.45–0.65, 45.65)

post-training subscale scores by 4.20 compared to the other training programmes ($p < 0.01$; Table A6). Attendance at training programme 2 significantly decreased post-training subscale scores by -2.97 compared to the other training programmes ($p < 0.05$; Table A6). Overall, relatively small proportions of the overall variance in post-training subscale scores were explained by attendance at training programme 5 (1.66%) or training programme 2 (0.96%).

Impacts of training on system-wide knowledge and attitudes

In matched analyses ($n = 431$), a statistically significant increase was observed in participants' system-wide trauma-informed knowledge and attitudes subscale scores from baseline (mean = 24.88; SD = 4.17) to post-training (mean = 27.02; SD = 3.62; $p < 0.001$), with a medium effect size [$d = 0.55$ (0.45–0.65, 45.65)]. Participants in each programme individually and overall demonstrated positive changes in system-wide trauma-informed knowledge and attitudes subscale scores from baseline to post-programme (Table 3).

In multivariate analyses, after controlling for baseline system-wide trauma-informed knowledge and attitudes subscale scores and sociodemographic factors, the model which best predicted post-training subscale scores included attendance at training programme 2, which when added to the model significantly improved the predictive ability of the model (Table A7). Baseline subscale scores significantly increased post-training subscale scores, where an increase in baseline subscale scores by 1 increased post-training subscale scores by 0.35 ($p < 0.001$; Table A7). However, attendance at training programme 2 significantly decreased post-training subscale scores by -1.91 compared to the other training programmes ($p < 0.001$; Table A7). Overall, a relatively small proportion of the overall variance in post-training subscale scores was explained by attendance at training programme 2 (4.41%).

Discussion

The findings of this study indicate that there may be differences across sociodemographic groups of professionals in their individual-level and system-wide trauma-informed knowledge and attitudes. Findings suggest that trauma-informed training sessions with a range of different delivery models have beneficial impacts for trainees' individual-level and system-wide trauma-informed knowledge and attitudes. However, there may be differences in how effective different training programmes are in terms of improving trainees' trauma-informed knowledge and attitudes, depending on how the training sessions are delivered.

Research has shown that across multiple systems and organisations, staff generally recognise the importance of moving towards trauma-informed care, to improve outcomes for the most vulnerable people (Barton et al. 2018, 2019; Gillespie-Smith et al. 2020; Hardcastle and Bellis 2021). However, staff generally also highlight that they do not necessarily have the knowledge and skills to be able to identify trauma in individuals and to offer support in the most appropriate ways (Barton et al. 2018, 2019; Beer et al. 2020; Gillespie-Smith et al. 2020; Hardcastle and Bellis 2021). Currently, there is very little evidence which examines differences by sociodemographic factors in baseline levels of trauma-informed knowledge and attitudes. This information may be important in terms of targeting trauma-informed training towards the groups of professionals who may benefit most, and may help to inform collaborative multi-agency approaches towards trauma-informed working. The current study indicates that there may be important differences across sociodemographic groups in terms of individual-level and system-wide trauma-informed knowledge and attitudes of professionals.

Of particular interest, the current study found that staff with 10+ years of experience working for their organisation may have lower levels of individual-level trauma-informed knowledge and attitudes than those who had worked for their organisation for 2 years or less. Interestingly, however, those with 3–9 years of working experience had lower levels of system-wide trauma-informed knowledge and attitudes than those with 2 or less years of experience, but those with 10+ years of experience did not. This may suggest a drop-off in terms of staff's attitudes regarding the importance of trauma-informed practices after the early stages (1–2 years) of working with an organisation, but this may not be maintained as staff progress later into their careers. While staff with 3–9 years of experience may not experience reductions in knowledge and attitudes relating to their understanding of trauma and trauma-informed practice, their attitudes relating to the importance of trauma-informed practice may be poorer. This may be due to repeatedly being exposed to traumatic situations while working with clients in the early- and mid-career stages, heightening experiences of vicarious trauma, burnout, and stress, which in turn negatively affect their own personal health and well-being, and may limit their capacity to recognise the importance of trauma-informed practices for their work (Cartwright and Roach 2021; Cieslak et al. 2014; Isobel and Thomas 2022). However, staff with 10+ years of experience may over time have experienced degradation of their levels of understanding of trauma and trauma-informed practice, but may have regained their understanding of the importance of trauma-informed practice. This may be due to these staff being more likely to have moved away from more client-facing roles, meaning that they are not as likely to be utilising trauma-informed practices in their

day-to-day interactions with clients; however, due to their working experience, these staff can identify the importance of trauma-informed practice. Critically, trauma-informed approaches stress the importance of professionals supporting their own physical and mental well-being, and organisations supporting that of their staff (ACE Hub Wales 2022; BNSSG 2021). As such, implementing policies and practices which increase the presence of protective factors against experiencing vicarious trauma, burnout, and stress should be a priority for organisations across the wider system.

Importantly, there may exist differences in baseline levels of trauma-informed knowledge and attitudes by the type of organisation individuals work for. In the current study, baseline levels of trauma-informed knowledge and attitudes were significantly higher for community/third-sector professionals and lower amongst criminal justice/policing professionals relative to professionals from other types of organisations. Findings here could indicate that amongst some types of organisations there exist more entrenched barriers to professionals gaining knowledge and skills in and supporting trauma-informed practice. Such barriers may include heightened levels of demand for services, unreasonable expectations placed on staff, limited well-being support for staff, lack of training for staff, lack of leadership commitment and support, and organisational-level cultural barriers (Barton et al. 2019; Gillespie-Smith et al. 2020; Handran 2015; Huo et al. 2023; Quigg et al. 2023; Wassink – de Stiger et al. 2022). Addressing these key barriers should also be priorities for organisations. Notably, working for criminal justice/policing organisations was the strongest predictor (in a negative direction) of both individual-level and system-wide trauma-informed knowledge and attitude subscale scores, indicating that there may be a greater need for practices and policies which promote and support trauma-informed practices for this sector. Further, enhancing the role of collaboration between professionals from different types of organisations may be helpful in sharing trauma-informed knowledge and skills amongst professionals from across the wider system. Where appropriate, ensuring that professionals from relevant community/third-sector organisations are included in such collaborations may be one way to help promote positive trauma-informed working approaches. Interestingly, for both STISC subscales, the strongest predictors of baseline trauma-informed knowledge and attitudes were organisational-level factors (i.e. the type of organisation worked for), rather than individual-level characteristics. This may indicate the critical nature of organisational-level factors such as culture in shaping staff's trauma-informed knowledge and attitudes, and therefore their practices. Overall, the models could only predict a small amount of the variance in both the individual-level (12.3%) and system-wide (6.7%) trauma-informed knowledge and attitudes subscale scores. This may indicate that there are other factors which

were not explored in the current study that are important in determining staff's baseline levels of trauma-informed knowledge and attitudes, including factors such as staff's own ACEs, ongoing experiences of trauma, current health and well-being, organisational culture, and levels of workplace demands. Future research exploring sociodemographic differences in the trauma-informed knowledge and attitudes of professionals may wish to capture such measures for a more comprehensive analysis of the factors influencing trauma-informed knowledge and attitudes.

Study findings indicate that a suite of different training programmes can improve trauma-informed knowledge and attitudes for professionals from a range of different professional backgrounds. Changes in trauma-informed knowledge and attitudes included improvements in trainees' understanding of brain physiology and biology in relation to ACEs, the impacts which ACEs and trauma can have, awareness of trauma-informed practices and approaches, and the importance of trauma-informed working. Crucially, one of the training programmes was specifically targeted towards organisational leadership staff and managers. In prior research and evaluations, the extent to which leadership staff have been included in trauma-informed training programmes, or the extent to which programme content is tailored specifically towards leadership staff, has not been explored. Training which is tailored towards leadership staff is important because this group is well positioned to implement changes to organisational practices and policies to improve their organisation's response to trauma. Pivotal, this includes how organisations work to address staff's needs in relation to their own ACEs and trauma (and negative experiences resulting from exposure to traumatic situations involving others), an often overlooked yet central aspect of trauma-informed practice (ACE Hub Wales 2022; BNSSG 2021). Interestingly, there were no differences in individual-level trauma-informed knowledge and attitudes between leadership staff and non-leadership staff, and no differences in system-wide trauma-informed knowledge and attitudes once other factors were controlled for in multivariate analyses. Critically, the finding that both individual-level and system-wide trauma-informed knowledge and attitudes were significantly higher for individuals attending the training programme for leadership staff may indicate that training is important for this group to ensure they have the necessary knowledge and skills to be able to enact positive changes in relation to their organisation's trauma-informed approaches, and to champion the need for trauma-informed practices with their staff. This is particularly important given that in the current study, staff with more years of experience, who may go on to become leadership staff in the future, had lower levels of individual-level trauma-informed knowledge and attitudes at baseline. If these staff do go on to become organisational leaders, they will need to have the

key trauma-informed knowledge and skills to be prepared to interact sensitively with and manage the workplace needs of staff who may be impacted by their own trauma (including ACEs) or by being exposed to traumatic situations at work (i.e. vicarious trauma).

While overall the training programmes had positive impacts on trainees' trauma-informed knowledge and attitudes, some of the programmes had significantly more positive impacts than others. These differences may be due to training-level factors, such as differences in how training programmes were delivered. For example, the training programme which appeared to have the greatest impact on individual-level trauma-informed knowledge and attitudes was delivered in-person to staff from a mix of professional backgrounds, was delivered over a longer time period (three consecutive days), and heavily integrated elements of experiential and action-based learning (e.g. reflections, role plays, simulation). Conversely, the training programme that appeared to have the least impact on both individual-level and system-wide trauma-informed knowledge and attitudes was delivered online to staff from only one professional background, and did not include dedicated built-in time for trainees to self-reflect and discuss their practices or learn and practice key skills. Ensuring that trainees have time and space to reflect on their own practices, develop a deeper understanding of approaches by interacting with individuals from different professional backgrounds, and practice utilising specific skills may be important factors in the impact which training programmes can have on trauma-informed knowledge and attitudes, and critically on practices. To ensure trauma-informed practice training programmes are most effective, these training-level factors should be considered by training providers when designing and delivering training programmes. However, there may also be factors which are external to the training delivery that may impact the efficacy of training sessions. For example, organisations having cultures which are not supportive of trauma-informed practice, high levels of demand within services, and high levels of staff burnout may limit the extent to which trauma-informed practice training can be effective. These external factors may also be important for organisations to take account of when deciding to implement trauma-informed training programmes with their staff.

Findings within the current study must be considered in light of the following limitations. The study utilised matched-pair analyses of baseline and post-training surveys. However, there was a low retention rate in completing both baseline and post-training surveys within some of the training programmes. This may limit the generalisability and validity of the findings. Overall, there is a need to assess the impacts of such training programmes utilising more robust methodologies, including examination of the impacts of training on actual staff practices and organisational-level

changes over the longer term, and the impacts on outcomes for people engaged with services. There may have been organisational-level factors which were not measured by surveys which affect the differences found in baseline trauma-informed knowledge and attitudes between sociodemographic groups and the efficacy of the training programmes. Future research examining the impacts of organisational-level factors on trauma-informed knowledge, attitudes, and practices, and on the efficacy of trauma-informed training programmes may be worthwhile.

Conclusion

This study suggests that a range of trauma-informed training programmes with different delivery models are effective in improving professionals' trauma-informed knowledge and attitudes. However, training programmes which are delivered in person to a group of staff from mixed professional backgrounds, over a longer time period, and which embed elements of experiential and action-based learning into their delivery methods may be more impactful than those without these elements. Such factors should be considered by organisations who deliver trauma-informed practice training, and by organisations looking to implement training sessions to improve the practices of their staff and wider organisation. Interestingly, one training session was implemented with content tailored towards leadership staff, who may be an important group in driving forward changes at the organisational and system levels to improve trauma-informed approaches. Further, this study found that there may be important sociodemographic differences in individuals' baseline levels of trauma-informed knowledge and attitudes. Findings suggested that those with more years of experience working for their organisation and those from criminal justice/policing professional backgrounds may have lower levels of trauma-informed knowledge and attitudes, while those with fewer years of experience working for their organisation and those from community/third-sector organisations may have higher levels of trauma-informed knowledge and attitudes. This may have implications in terms of where best to target resources to improve trauma-informed practices and for collaborative multi-agency approaches towards trauma-informed working.

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Declarations

Ethics approval Formal ethical approval was granted by the Liverpool John Moores Research and Ethics Committee, and the study was performed in accordance with the Declaration of Helsinki.

Consent to participate Informed consent was obtained from all study participants before taking part in the research.

Consent for publication Not applicable.

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