RESEARCH ARTICLE

Attachment Insecurity, Responses to Critical Incident Distress, and Current Emotional Symptoms in Ambulance Workers

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Abstract

Ambulance workers are exposed to critical incidents that may evoke intense distress and can result in long-term impairment. Individuals who can regulate distress may experience briefer post-incident distress and fewer long-term emotional difficulties. Attachment research has contributed to our understanding of individual differences in stress regulation, suggesting that secure attachment is associated with effective support-seeking and coping strategies, and fewer long-term difficulties. We tested the effect of attachment insecurity on emotional distress in ambulance workers, hypothesizing that (1) insecure attachment is associated with symptoms of current distress and (2) prolonged recovery from acute post-critical incident distress, coping strategies and supportive contact mediate this relationship. We measured (1) attachment insecurity, (2) acute distress, coping and social contact following an index critical incident and (3) current symptoms of post-traumatic stress, depression, somatization and burnout and tested the hypothesized associations. Fearful-avoidant insecure attachment was associated with all current symptoms, most strongly with depression ($R = 0.38$, $p<0.001$). Fearful-avoidant attachment insecurity was also associated with maladaptive coping, reduced social support and slower recovery from social withdrawal and physical arousal following the critical incident, but these processes did not mediate the relationship between attachment insecurity and current symptoms. These findings are relevant for optimizing post-incident support for ambulance workers. Copyright © 2011 John Wiley & Sons, Ltd.

Introduction

Ambulance workers and other first responders, such as firefighters and police officers, are exposed at times to acutely stressful incidents in the course of their work. These 'critical incidents', which range from incidents involving mass casualties to the death of a child, may evoke intense emotional distress and can result in acute and long-term impairment (Halpern & Maunder, in press). Not all critical incidents are experienced as traumatic, i.e. meeting DSM-IV Criterion A for post-traumatic stress disorder (PTSD). Furthermore, whereas critical incidents may cause PTSD in some cases, their sequelae are broader and may also include subsyndromal post-traumatic symptoms and depression, burnout and

stress-related physical symptoms (Bennett *et al.*, 2005; Alexander & Klein, 2001; Aasa, Brulin, Angquist, & Barnekow-Bergkvist, 2005). These symptoms account for significant morbidity in ambulance workers (Bennett, Williams, Page, & Woollard 2004; van der Ploeg & Kleber, 2003; Sterud, Ekeberg, & Hem, 2006) and likely contribute to their high rates of sickness absence and early retirement on medical grounds compared with other health care workers (Sterud, Ekeberg, & Hem, 2006; Information Centre for Health and Social Care, 2010). Since critical incidents have a wide range of consequences that can affect the function, well-being and productivity of first responders, it is important to identify and understand factors that mitigate these effects.

In general, responses to stressful events are understood to depend on interactions between the nature of the stressor, characteristics of the individual and the broader environmental context. The current study focuses in particular on individual differences in the ability to regulate acute distress following a critical incident. Individuals who are more successful in regulating acute distress may experience distress over a shorter period and, in turn, reduce their risk of long-term emotional difficulties (Halpern, Maunder, Schwartz, & Gurevich, 2011; Maunder, Lancee, Balderson, *et al.*, 2006). Although effective coping strategies and social support are important buffers of stress in the workplace and elsewhere, the value of attachment theory as an integrative approach to understanding individual differences in coping and in seeking and receiving effective support has received less attention. For example, social support for ambulance workers may be provided by peers and management in the workplace (Eriksson, Foy, & Larson, 2004; Halpern, Gurevich, Schwartz, & Brazeau, 2009b) and by friends and family (Ørner, 2003). However, social support is not simply an environmental resource for an individual in distress. People differ in their capacity to ask for support and to accept support that is offered. Furthermore, the benefits of support may vary with the social role of the supporter (i.e. on the nature of the relationship). Knowledge of individual differences in patterns of adult attachment can clarify these complexities. The purpose of the current study is to examine how individual differences in attachment security are related to the capacity to use support effectively and to regulate emotions internally and to the sequelae of critical incidents.

Attachment theory (Bowlby, 1969) describes how experiences in crucial relationships, beginning with the relationship of an infant to his or her care-giving parent, influence the use of both internal and external resources to manage distress. Bowlby hypothesized that in the context of repeated salient interactions during critical developmental periods, infants develop a working model (cognitive schema) that encodes expectations of self and others at times of personal threat. This working model, although open to revision in response to contrary experience, provides the basis for stable trait-like emotional–behavioural–cognitive responses to stressful experiences. Importantly, the working model is a specific cognitive schema that relates to strategies for maintaining physical and emotional security through interpersonal interactions and regulation of internal resources. A large body of research has identified stable individual differences in patterns of attachment not only in infants and children but in adults as well (Mikulincer & Shaver, 2007). Thus, attachment theory provides a theoretical basis for understanding individual differences in using social relationships and coping strategies to regulate stress, which could be highly relevant to managing responses to critical incidents.

Individual differences in patterns of adult attachment are often measured along two dimensions of attachment insecurity: attachment anxiety and attachment avoidance (Mikulincer & Shaver, 2007). With respect to one's characteristic interpersonal stance, attachment anxiety is associated with an amplified fear of separation and loss and desire for intimacy and dependence on others. Attachment avoidance is associated with mistrust of intimacy and dependence, a preference for self-reliance, and with resistance to seeking social support. Early studies of attachment and stress used a three-category model, consisting of secure, insecure-preoccupied and insecure-avoidant attachment. Bartholomew and Horowitz (1991), however, described a more nuanced four-category model, consisting of one secure and three insecure attachment styles, based on combinations of extreme positions on the two dimensions of attachment anxiety and attachment avoidance. In this system, secure attachment consists of low attachment avoidance combined with low attachment anxiety. Secure attachment is associated with flexibility in the use of both intrapsychic and interpersonal sources of calming and regulation of distressing affects. There is robust evidence that attachment security is associated with effective support seeking (Mikulincer & Shaver, 2007). Secure individuals are also able to internally regulate emotions through such coping strategies as problem-solving, planning and cognitive reappraisal (Mikulincer & Shaver, 2007). Preoccupied insecure attachment is characterized by high attachment anxiety and is associated with amplified emotional expression and a preference for interpersonal sources of solace, which are often dissatisfying because those who could provide support are experienced as unavailable, inconsistent or frustrating. Dismissing-avoidant insecure attachment, on the other hand, is characterized by high attachment avoidance and is associated with defensive concealment of impaired affect regulation and a preference for regulating affect via distancing, distraction and disengagement (Maunder & Hunter, 2009). The fourth category, fearful-avoidant insecure attachment, combines high attachment anxiety and high attachment avoidance. Fearful-avoidant insecure attachment can be understood as a failure of dismissing defences under conditions of high stress (Mikulincer & Shaver, 2007) and is characterized by poor affect regulation, anxious isolation from others and ineffective accessing of social support (Maunder & Hunter, 2009).

Attachment style has been studied in security guards (Vanheule & Declerq, 2009) and police officers (Bogaerts, Daalder, Van der Knapp, Kunst, & Buschman, 2008) but not in ambulance workers. Vanheule & Declerq (2009) found that fearful-avoidant insecurity was associated with higher burnout scores. Indirect observations suggest that avoidant attachment may be common in ambulance workers (Miller, 1995). Almost one in three ambulance workers prefers not to talk about a critical

incident immediately after exposure (Ørner, 2003). In a qualitative study of the barriers to seeking support after a critical incident, ambulance workers expressed concern that supervisors would not be supportive. Although some wanted support, they were reluctant to request it lest they be rebuffed or stigmatized. This resulted in a complex 'dance', in which ambulance workers would respond to supervisors who offered material assistance but would need strong signs that the supervisor was genuinely interested before revealing a need for emotional support. The perceived lack of supervisor support engendered disappointment and anger. A desire for supportive contact combined with mistrust suggested that fearful-avoidant attachment insecurity may contribute to ambulance workers' difficulties accessing support after critical incidents (Halpern *et al.*, 2009b).

An insecure attachment style interferes with receiving satisfactory support, managing emotions and choosing coping strategies after exposure to stress and increases the risk of long-term sequelae, whereas a secure attachment style offers some protection against long-term sequelae of stress (Simeon *et al.*, 2007; Mikulincer & Shaver, 2007). In summary, there is considerable empirical evidence that attachment style influences coping strategies and social behaviour in response to stress.

This study of ambulance workers responding to critical incident exposure focused on how attachment insecurity is related to post-incident coping strategies and social behaviour and, in turn, to current symptoms. We also chose to examine the relationship between attachment style and poor stress regulation in the very early post-incident period and whether this is related to current symptoms. Recent evidence suggests that prolonged recovery from acute post-incident distress is associated with later symptoms (Halpern, Maunder, Schwartz, & Gurevich, 2011); however, the antecedents of prolonged recovery from acute post-incident distress remain unclear. Since attachment insecurity precedes the incident, it could affect stress regulation, even in the very early post-incident period. We hypothesized that attachment insecurity, particularly fearful-avoidant insecurity, would be associated with (1) poor regulation of acute post-incident distress, characterized by higher incidence of acute post-critical incident distress and slower recovery from this distress, (2) maladaptive coping strategies, (3) ineffective social behaviours and (4) long-term distress, i.e. current PTSD, depressive, burnout and somatic symptoms. We further explored the possibility that an association between attachment insecurity and current symptoms could be mediated by factors (1), (2) and (3).

Methods

Participants and procedure

A survey of front-line and supervisory ambulance workers was conducted in a large urban emergency medical services (EMS) organization. Recruitment has been described previously (Halpern *et al*, 2011). Consenting voluntary participants were recruited from attendees of a mandatory continuing education programme. Ambulance workers who were on leave were informed of the study by mail. Participants completed their choice of a paper or web-based survey. Research ethics approval was obtained. Of 906 ambulance workers who were informed of the study, 635 signed consent forms, and 243 (38.3%) completed questionnaires. Complete attachment measures were available for 189 participants, who form the cohort for this study.

Instruments

Attachment security

The Relationship Scales Questionnaire (RSQ) consists of 30 items probing feelings about close relationships, which are scored on a five-point scale from 'not at all like me' to 'very like me' (Griffin & Bartholomew, 1994). The scale's authors defined four scales that use 17 RSQ items to measure dimensions of secure, fearful, preoccupied and dismissing attachment. This scale has the advantage of measuring all four subscales independently. In the current sample, the internal reliability of the fearful-avoidant category was adequate (Cronbach's alpha = 0.70), which enabled its use in the analysis. Because the internal reliability of the other scales was weak (secure 0.46, dismissing 0.51, preoccupied 0.32), they were not analysed.

Index critical incident

Critical incidents were identified retrospectively. We defined critical incidents as 'calls that have generated unusually strong feelings, either because of the incident itself, or how it was handled or some other reason'. To maximize opportunities for response, we offered options for identifying an index incident. Participants were first asked to identify an incident that was 'still troubling' (51% of participants identified such an incident). Those who could not identify a still troubling incident were asked to identify an incident that 'had been troubling in the past' (40%). Those who could not identify a single incident of this type were asked to describe 'a composite of a number of critical incidents' (2%). Finally, those who were unable to describe a composite were asked to describe 'one of your worst calls' (6%).

Peritraumatic dissociation

The Peritraumatic Dissociation Experience Questionnaire (Marmar, Weiss, & Metzler, 1998) is a commonly used ten-item questionnaire that probes dissociative responses during or immediately after a critical incident (e.g. 'What was happening seemed unreal to me, like I was in a dream or watching a movie or a play'). The scale is scored as the mean of responses, measured on a five-point scale from 1 ('not

at all true/does not apply') to 5 ('extremely true'). In the current sample, internal reliability (Cronbach's alpha) was 0.85. Peritraumatic dissociation scores were non-parametrically distributed and skewed toward the minimum score (median = 1.5, interquartile range 1.2–2.1).

Peritraumatic distress

The Peritraumatic Distress Inventory is a 13-item inventory that probes emotional and physical responses at the time or immediately after a traumatic incident. It has previously demonstrated internal reliability and stability over time. We omitted one item (difficulty controlling bowel and bladder) that was least endorsed in the inventory development in police officers and had lower item–total correlations in a previous study (Brunet *et al.*, 2001). The scale is scored as the mean of all item scores, rated on a four-point scale from 1 ('not at all true') to 4 ('extremely true'). In the current sample, internal reliability was 0.73. Peritraumatic distress scores were approximately normally distributed (mean 1.95 ± s.d. 0.48).

Time to recover from reactions to critical incident

We measured five components of the acute stress reaction (Christodoulu, Paparrigopoulos, & Soldatos, 2003) in response to the critical incident. The components measured were physical reactions ('like sweating, shaking and pounding heart'), distressing feelings ('like fear, anger, horror, guilt, shame, worry or sadness'), disturbed sleep ('sleep disrupted by the incident'), irritability ('irritable, mean or snappish') and social withdrawal ('if you withdrew or pulled back from other people'). For each dimension, participants reported the occurrence in response to the incident and how long it took to get back to normal by choosing one of seven options: (1) did not have this reaction or returned to normal (2) soon after the call (a few hours), (3) by the next night, (4) by the next week, (5) by the next month, (6) within a few months or (7) still not normal.

Coping

The Brief COPE is a 28-item questionnaire with each item measured on a four-point scale, from 1 ('I didn't do this at all') to 4 ('I did this a lot') (Carver, 1997). It is an abbreviated version of the COPE Inventory and has been used in studies on cancer patients and a community sample recovering from a disaster. The Brief COPE has the advantage of one additional scale: self-blame, which appeared to be important in a previous study of ambulance workers (Halpern, Gurevich, Schwartz, & Brazeau, 2009a). Factor analysis yielded a factor structure that was generally consistent with that reported for the full COPE. It has the further advantage that it can be used retrospectively. We adapted the language, as suggested

by the authors, for the time scale we were interested in, i.e. the first 24 h after the index critical incident.

Contact and support

Contact with others in the first 24 h after the critical incident was surveyed for each of 12 groups of persons (other paramedic at the scene, other paramedic not at scene, dispatcher, duty officer, supervisor, family member, friend, staff psychologist, employee assistance counsellor, outside helping professional, other person). For each group, participants were asked if they had contact and, if so, to rate the helpfulness of this contact on a five-point scale from very unhelpful to very helpful. Participants also rated the characteristics of this contact including the degree to which they discussed facts, on a four-point scale ('Not at all', 'Just an overview and for a short time', 'For longer than that' and 'In detail for a long time'), and the degree to which they expressed emotions, on a four-point scale ('I kept them to myself', 'I let out some of my feelings', 'I really showed how I felt' and 'I could not control my feelings').

Depressive symptoms

The Centre for Epidemiologic Studies Depression Scale, short form (CES-D-10), is a ten-item scale in which responses rate the frequency of depressive phenomena over the most recent block of shifts worked on a four-point scale from 0 (rarely or none of the time, less than one day) to 3 (all of the time, 5–7 days). CES-D-10 scores show concurrent validity with measures of positive affect ($r = -0.63$) and poor health status ($r = 0.37$). The ten-item scale is highly correlated with the full 20-item scale, which has been validated against clinical diagnoses of depression (Andresen, Malmgren, Carter, & Patrick, 1994). The period 'your current or most recent block of shifts on duty' was used rather than 'over the last week' because ambulance workers interviewed in the earlier phase of this research reported that perceived psychological distress was worse during blocks of shifts on duty than during blocks off duty. Internal reliability was 0.77. In the current sample, scores were approximately normally distributed (mean 7.4 ± 4.6).

Post-traumatic symptoms

The Impact of Events Scale-Revised (IES-R), a widely used self-report measure of traumatic stress, is composed of 22 items probing the intensity of distress associated with a particular event on a five-point scale from 0 (not at all) to 4 (extremely). The scale is scored as the mean of item scores. The IES-R yields three subscales (avoidance, intrusion and hyperarousal) and a total score. The three subscales have strong internal consistency and satisfactory test–retest reliability (Weiss & Marmar, 1997). The correlation between the Mississippi Scale for combat-related PTSD, Civilian Version and the three subscales of the IES-R were

intrusion, $r = 0.53$, avoidance, $r = 0.55$, and hyper-arousal, $r = 0.55$ (Weiss, 2004). Internal reliability for the total scale was 0.91. In the current sample, 56 participants (25%) identified the index IES event as the critical incident, 126 (55%) indicated some other experience and 46 (20%) did not specify an event. IES-R scores were non-parametrically distributed and skewed toward the minimum score (median 0.7, interquartile range 0.3–1.0).

Somatic symptoms

The Brief Symptom Inventory (BSI) is an abbreviated version of the Symptom Checklist 90-revised (SCL-90R) (Derogatis & Melisaratos, 1983). The seven-item somatization subscale probes how much the participant was distressed by the discomfort of a physical symptom over the last block of shifts on duty using a five-point scale, from 0 ('not at all') to 3 ('extremely'). The SCL-90 is widely used and has demonstrated reliability and validity (Derogatis, 1977). The BSI-somatization scale has been validated against the SCL-90R and comparable scales of the MMPI. In the current study, internal reliability was 0.79. In the current sample, somatization symptom scores were non-parametrically distributed and skewed toward the minimum score (median 0.36, interquartile range 0.14–0.64).

Burnout

The nine-item emotional exhaustion subscale of the Maslach Burnout Inventory Human Services Survey shows strong reliability and validity (Maslach, Jackson, & Leitner, 1997). Responses describe the frequency of phenomena over a long period (up to a year) on a seven-point scale from 1 (never) to 7 (every day). Burnout scores were approximately normally distributed (mean 21.8 ± 11.6).

Data analysis

Univariate relationships between fearful-avoidant attachment and each post-critical incident variable (peritraumatic dissociation; peritraumatic distress; post-incident coping strategies; duration of recovery from post-incident physical arousal, emotional distress, social withdrawal, irritability and insomnia) and current symptoms (depressive, post-traumatic, somatic and burnout) were tested by Spearman rank-order correlations or by Kruskal–Wallis Chi-square test as appropriate, using the Bonferroni correction for multiple comparisons.

The relationship between fearful-avoidant attachment as a continuous variable and contact/support variables was tested in a series of multiple logistical regression analyses (binary variable: any contact in the first 24 h with (1) paramedic at scene, (2) paramedic not at scene, (3) supervisor, duty officer or dispatcher, (4) family member and (5) friend) and multiple linear regression analyses (ordinal variable: number of types

of contact in first 24 h on a six-point scale from 0 to '5 or more').

Stepwise regression analyses tested post-critical incident variables as potential mediators of the relationship between attachment dimensions and current symptoms if the univariate relationship between attachment and symptoms was moderate ($R^2 > 0.20$), using the methods of Baron and Kenny (1986). According to these methods, four criteria are required for mediation: (1) the predictor variable (attachment insecurity) must be related to the outcome variable (current symptom), (2) the predictor must be related to the hypothesized mediator (e.g. coping strategy), (3) the mediator must be related to the outcome variable and (4) the relation between the predictor and the outcome variable must be weaker after adjusting for the mediator. In this analysis, post-incident recovery time was recorded on a four-point scale ('did not occur', 'recovery by next night', 'recovery after next night' and 'did not recover').

Results

Of 189 participants, 117 (62%) were men. Mean age was $37.4 \pm$ standard deviation 9.2 years. Mean years of service was 7.6 ± 3.3. Level of training was distributed as 80 (42%) level 1, 36 (19%) level 2, 68 (36%) level 3, 3 (2%) level 4 (supervisors), 2 (1%) data missing. One hundred thirteen participants (60%) were married or in common-law relationships. For comparison, the characteristics of the EMS service from which the participants were recruited were as follows: 76% men, mean age 37.5 years, mean years of service 11.4, level of training distributed as 52% level 1, 24% level 2, 21% level 3, 3% supervisors. Thus, the sample of participants was similar to the EMS service as a whole except that female gender and more experienced and more highly trained paramedics were over-represented. The number of career critical incidents and time elapsed since the index incident is presented in Table I. The majority of participants (122, 64.6%) had experienced between one and five career critical incidents. For most (124, 65.5%), the index incident was more than a year in the past. Table II shows the association between fearful-avoidant attachment and both peritraumatic and coping variables. There was no relationship with peritraumatic distress or peritraumatic dissociation. Correlations between fearful-avoidant attachment style and post-incident coping were weak but significant for substance use, not seeking emotional support, and coping through disengagement.

With respect to contact with others in the 24 h following the critical incident, fearful-avoidant insecure attachment was associated with having less contact with family members and friends, having fewer contacts overall, and with lower perceived helpfulness of those contacts (Table III).

The higher an individual's fearful-avoidant attachment, the more likely he/she was to experience physical

Table I. Experience of participants with critical incidents

	n	%
Number of career critical incidents		
None	5	2.6
1 to 5	122	64.6
6 to 10	18	9.5
>10	38	20.1
Data missing	6	3.2
Time since index critical incident		
Within 1 year	45	23.8
1 to 5 years	77	40.7
6 to 10 years	22	11.6
>10 years	25	13.2
Data missing	20	10.6

Table II. Spearman's rank-order correlations between fearful-avoidant insecure attachment and immediate response to critical incident

	Fearful avoidant	Significance
Peritraumatic dissociation	0.07	ns
Peritraumatic distress	0.03	ns
Coping in first 24 h post-incident		
Self-distraction	0.02	ns
Active coping	−0.04	ns
Denial	0.02	ns
Substance use	0.21	0.003
Seeking emotional support	−0.22	0.002
Seeking instrumental support	−0.06	ns
Disengagement	0.23	0.002
Venting	−0.07	ns
Reframing	0.02	ns
Planning	−0.01	ns
Humour	0.09	ns
Acceptance	−0.06	ns
Religion	−0.11	ns
Self-blame	0.13	ns

Significance is $p \leq 0.003$, using Bonferroni correction for 16 comparisons.

Table III. The relationship between fearful-avoidant attachment and contact with others in the first 24 h after the index critical incident

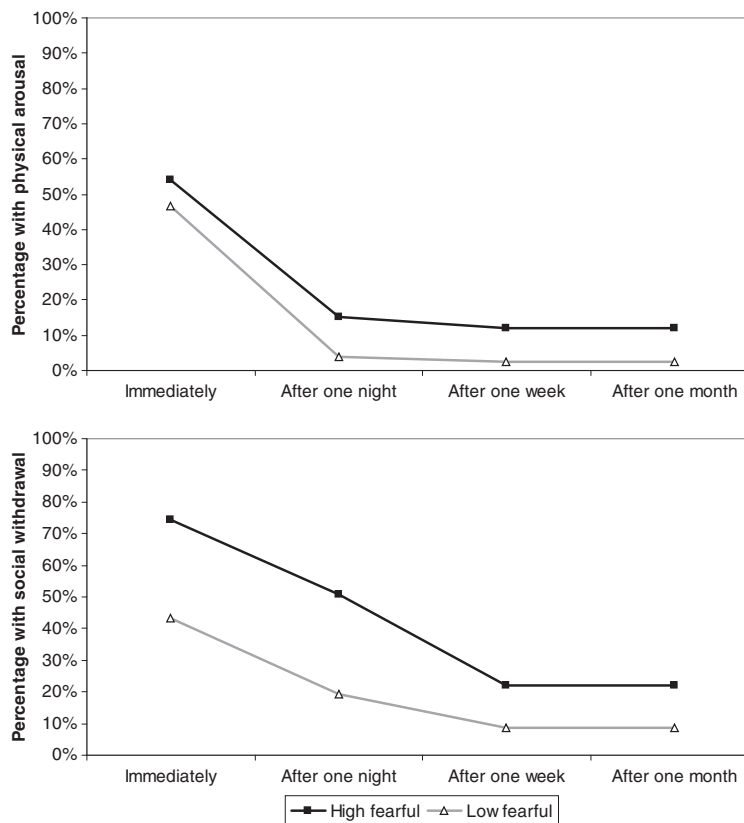|	Fearful avoidant	
	F (df 1)	Significance
Contact in first 24 h with…		
other paramedic at scene	2.8	0.10
other paramedic not at scene	0.7	0.39
dispatcher, duty officer or supervisor	1.2	0.28
family member	6.7	0.01
friend	3.9	0.049
Number of types of contact*	5.8	0.02
Number of types of contact…		
in which feelings were expressed	3.6	0.06
in which facts were discussed in detail	1.0	0.32
that were helpful	8.0	0.005

df, degrees of freedom.
*Scored on an index from 0 to 12, based on count of contact with persons in 12 possible roles: other paramedic at the scene, other paramedic not at scene, dispatcher, duty officer, supervisor, family member, friend, staff psychologist, employee assistance counsellor, outside helping professional, other person.

Table IV. Relationship between fearful-avoidant attachment and recovery from post-critical incident distress or arousal

	Fearful avoidant	
	Chi-square*	*p*
Time to recovery from:		
Physical arousal	8.5	0.04
Distressing feelings	3.6	0.31
Insomnia	6.5	0.09
Irritability	6.4	0.10
Social withdrawal	15.5	0.001

*Kruskal–Wallis test for four independent groups (did not occur, recovery by next night, recovered after next night and did not recover).

arousal and social withdrawal following the index critical incident and the longer these responses took to recover (Table IV). As illustrated in Figure 1, both physical arousal and social withdrawal were more likely to occur and slower to recover in the days following the incident among those in the upper tercile of fearful-avoidant attachment. Particularly striking was the difference in incidence of social withdrawal, which occurred following critical incidents in 74.5% of ambulance workers in the upper tercile of fearful-avoidant attachment but in only 43.2% of ambulance workers in the lower two terciles.

Symptoms of depression ($R = 0.38$, $p < 0.001$), post-traumatic stress ($R = 0.22$, $p = 0.003$), somatic symptoms ($R = 0.24$, $p = 0.003$) and burnout ($R = 0.26$, $p < 0.001$) at the time of the survey were all significantly correlated with fearful-avoidant attachment. We used regression analyses to test if post-incident variables mediated the relationship between fearful-avoidant attachment and current symptoms of depression. We included potential mediators if they had significant univariate relationships with both fearful attachment and with depressive symptoms (coping through substance use and disengagement, post-critical incident recovery from physical arousal and social withdrawal). The regression sequence for depressive symptoms (Table V) demonstrates that the contribution of fearful-avoidant attachment to explaining the variance in current depressive symptoms is largely independent of the contribution of recovery from social withdrawal and physical arousal after the

Figure 1 Fearful-avoidant attachment (upper tercile versus lower two terciles) and time to recovery from post-critical incident arousal and social withdrawal

critical incident. Tests of mediation were not performed for the other three current symptom variables because the univariate relationship between fearful-insecure attachment and these variables was weak.

Discussion

This study supports the hypotheses that insecure attachment, particularly fearful-avoidant insecurity, is associated with both acute distress after critical incidents and current emotional difficulties in ambulance workers. In the short term, ambulance workers with greater fearful-avoidant attachment reported more frequent occurrence and longer duration of physical arousal and social withdrawal following a critical incident. In the long-term, fearful-avoidant attachment was associated with more severe burnout, PTSD, somatic and especially depressive symptoms. The association of insecure attachment with all of the current symptom complexes is understandable because these symptoms tend to co-occur after stressful incidents. For instance, PTSD frequently occurs in tandem with depression (Ikin, Creamer, Sim, & McKenzie, 2010), burnout (Mealer, Burnham, Goode, Rothbaum, & Moss, 2009) and somatization (Lieb, Meinlschmidt, & Araya, 2007). The regression analyses

in the current study show that the relationship between attachment style and long-term symptoms of depression is independent of the impact of attachment on the duration of recovery from social withdrawal and physical arousal after a critical incident.

The study methodology does not provide data to adjudicate between competing causal explanations for these associations. One possible explanation is that fearful-avoidant attachment influences the impact of critical incidents on subsequent distress but that this occurs through processes that were not measured in this study. Another possible explanation is that the correlation between fearful-avoidant attachment and recovery from acute stress after a critical incident and its correlation with current distress occur through different mechanisms that are unrelated to one another. A third explanation is that retrospective reporting on attachment patterns does not accurately reflect the pattern of attachment that was present at the time of the critical incident. We do not believe that this latter explanation is likely, given the previous evidence of the stability of adult attachment indices over time (Mikulincer & Shaver, 2007).

Another finding is that although peritraumatic distress and dissociation are recognized to contribute

Table V. Stepwise regression analysis testing post-critical incident variables as mediators of the relationship between fearful-avoidant attachment and current depressive symptoms

	Beta	t	Significance	Adjusted R^2
Step 1				
Fearful attachment	0.43	6.40	<0.001	0.18
Step 2				
a. Fearful attachment	0.37	5.87	<0.001	—
Recovery from physical arousal	0.36	5.80	<0.001	0.33
b. Fearful attachment	0.35	5.16	<0.001	—
Recovery from social withdrawal	0.29	4.39	<0.001	0.26
c. Fearful attachment	0.38	5.74	<0.001	—
Disengagement coping	0.18	2.74	0.007	0.21
d. Fearful attachment	0.41	6.06	<0.001	—
Number of helpful contacts (24 h)	−0.08	−1.14	0.26	0.18
Step 3				
Fearful attachment	0.33	5.10	<0.001	—
Recovery from social withdrawal	0.18	2.64	0.009	—
Recovery from physical arousal	0.31	4.70	<0.001	0.34
Disengagement coping is non-significant and excluded				

to long-term outcomes (Brunet et al., 2001), fearful-avoidant attachment appears to affect long-term outcomes independently of these factors. This may be because current distress, as measured in this study, is independent of critical incident exposure (possibly because of intervening stressors) or because peritraumatic factors affect long-term outcomes independently of personality.

Fearful-avoidant attachment is weakly associated with social contact and coping strategies employed after a critical incident. In terms of social contact, it is associated with fewer contacts overall and fewer helpful contacts. With respect to coping, fearful-avoidant attachment is associated with more use of substances and disengagement (which is described by the phrase 'I gave up trying to deal with it'), as well as less seeking of emotional support.

These associations are consistent with the predictions of attachment theory. They also expand our understanding of associations between attachment style, coping strategies and support seeking by introducing attachment style as a trait that contributes to variation in prolonged acute stress reactions. Although previous studies have shown that insecure attachment is associated with prolonged recovery from the acute effects of stress (Maunder, Lancee, Nolan, Hunter, & Tannenbaum 2006), the current study extends these findings to longer-term recovery from a real-world stressor in a high-stress occupation. Fearful-avoidant insecurity emerges as an important factor in

both short-term and long-term distress after critical incidents. Our findings in terms of long-term distress are consistent with one of the few studies examining long-term distress and fearful-avoidant insecure attachment. In Fraley and Bonanno's (2004) study of responses to bereavement, fearful avoidance was associated with higher levels of PTSD and depression. Our findings also suggest that fearful-avoidant insecurity leads to unhelpful coping strategies (substance use, less emotional support seeking and disengagement) and inhibits accessing helpful social support after a critical incident. These results are consistent with Bartholomew and Horowitz's (1991) findings that fearful-avoidant insecurity is associated with less reliance on others when upset and less self-disclosure than the other attachment dimensions.

Although this study suggests that fearful-avoidant insecurity may predict post-incident behaviour and later distress in ambulance workers, it does not suggest that ambulance workers have high levels of fearful-avoidant insecurity. Nor is this a study of categorical 'types'. Nonetheless, EMS organizations may use these results in understanding and training their employees. For instance, vocal dissatisfaction with support from supervisors after a critical incident is a potential marker of unmitigated post-incident distress and may be triggered by inadequate organizational response, especially in those who find accepting support to be challenging. EMS organizations need to ensure that supervisors are trained to offer support in a manner that maximizes access after a critical incident. Excellent supervisors intuit methods of effectively responding to even hard-to-reach individuals, and their wisdom and best practices should be harnessed in supervisor training programmes (Halpern et al., 2009b). Strategies include tactfully and genuinely expressing interest and concern despite initial rejections of support. Effective supportive responses on the part of management may also affect ambulance workers' expectations of obtaining support, especially in young recruits who are still open to change. Optimal emotional health is an important factor in maintaining operational readiness in this vitally important occupational group and well worth this type of organizational investment in employee education.

This study is limited by self-selection of participants and low participation rate. Out of a possible 900 participants, with 635 of these consenting to participate, only 243 completed the questionnaires. Of these, 189 completed the attachment measures and were included in the study. A number of factors may have contributed to the low response. To ensure confidentiality, we did not offer the option of completing the questionnaires in the workplace immediately after our recruitment presentation. This meant that these busy professionals were required to carve out at least an hour of their own time to complete the questionnaires. Since the attachment measures were at the end of the

questionnaire, they were especially susceptible to being incomplete. When the demographics of the participants were compared to the population of the organization, they were comparable, except that the female gender, greater experience and highest level of training were over-represented. Participation in the study was voluntary, and participants may differ from the non-participant workforce in exposure to critical incidents and attachment styles. For example, non-participation in the study could have been due to being overly stressed, and wishing to avoid reminders of critical incidents, or conversely to being less stressed, and uninterested in the study. As a further test on the representativeness of the sample, we compared participants who completed or did not complete the attachment measure and found that they did not differ with respect to number of career critical incidents experienced, time elapsed since the index critical incident, whether or not the index incident was still troubling, or current symptoms. The study population came from an urban EMS system, and results are not necessarily generalizable to other systems or emergency responders. The design consisted of two time points: (1) recollections of the critical incident, its early sequelae and responses, and (2) attachment measures and current distress measured at the time of the study. Because of the time lag between index critical incident and long-term outcomes, other intervening stressors may have played a causal role. This concern is particularly cogent with respect to the IES-R, where 55% identified an experience other than the index critical incident as the index IES-R event. Whereas

PTSD, by definition, is associated with an index stressor, the recovery environment, which may present further traumatic incidents in this population, may contribute to later emotional difficulties. The concept of 'cumulative trauma' (Marmar *et al.*, 2006) suggests that there is not always a clear pathway from a particular trauma to current symptoms, and as in depression, somatic symptoms and burnout, current symptoms are often not traced to one source. The early post-incident data may represent an individual's *typical* response to acute stressors, and therefore, the same delayed recovery and coping strategies may well have occurred in response to other stressors. Given the retrospective study design, recall bias is another limitation. Finally, replication of these findings with other methods of assessing attachment style that yield results with higher reliability is needed. Prospective replication that addresses these limitations is necessary.

Conclusion

High fearful-avoidant attachment insecurity is characterized by a reluctance to access support in times of distress because of anticipated disappointment. In this study of ambulance workers, fearful-avoidant insecure attachment was associated with prolonged short-term distress and current emotional symptoms, particularly depression, after critical incidents. It was also associated with maladaptive coping strategies and fewer and less satisfying use of social contacts. Although these associations are not necessarily causal, they can be used to inform strategies for supporting even hard-to-reach personnel in the ambulance services.

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