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Attachment and Posttraumatic Stress Disorder in Multiple Trauma Samples

Ask Elklit^{1*}, Karen-Inge Karstoft², Yael Lahav³ and Tonny Elmoose Andersen¹

¹Department of Psychology, University of Southern Denmark, Denmark

²Research & Knowledge Centre, Danish Veteran Centre, Ringsted, Denmark

³Center of Excellence for Mass Trauma, Tel Aviv University, Israel

Abstract

Introduction: Attachment orientations are associated with the severity of posttraumatic stress disorder (PTSD). However, the mediator role of trauma type in the association between attachment orientation and PTSD remains unknown.

Method: The relationship between trauma type, attachment, and PTSD was investigated in a large multiple trauma sample (n=3735). All participants were assessed for PTSD using the Harvard Trauma Questionnaire (HTQ) and for attachment orientations utilizing the Revised Adult Attachment Scale (RAAS).

Results: Overall, a secure attachment style was related to lower PTSD severity, while insecure attachment styles were related to higher PTSD severity. Although both attachment dimensions were related to PTSD severity, attachment anxiety had greater contribution in predicting PTSD. PTSD symptom clusters were not found to depend on attachment dimensions. Finally, type of traumatic event moderated the association between attachment dimensions and PTSD severity. While among trauma survivors of family illness, the securely attached group showed the lowest PTSD severity, among trauma survivors of disease and physical health, the dismissively attached individuals showed the lowest level of PTSD severity, compared to other attachment groups.

Conclusion: The results underscore the importance of taking into account the nature of the traumatic event while assessing the effects of attachment in posttraumatic reactions. Moreover, dismissing attachment style might be adaptive when facing the trauma of disease.

Keywords: Attachment; Trauma; Posttraumatic stress; PTSD; Attachment insecurity

Introduction

Since the introduction of the posttraumatic stress disorder (PTSD) diagnosis in 1980 in the DSM-III [1], a large number of empirical studies have investigated the prevalence of PTSD after different types of traumatic experiences. These studies have concluded that not everyone exposed to a traumatic event develops PTSD, and that some traumatic experiences are associated with a higher risk for developing PTSD than others [2]. In particular, difficulties in processing the emotional experience of a traumatic event are believed to be associated with PTSD. Such difficulties may arise from rigid views about the safety of the self and the environment, both before and after the traumatic event [3]. Indeed, because of the inability to cope with the stressful event, PTSD can be conceptualised as a disorder of affect regulation.

In a similar vein, attachment insecurity is defined by negative cognitive schemas about the self, the world, and others [4]. Moreover, attachment insecurity is related to affect regulation and problems thereof [5]. It is therefore reasonable to assume that different attachment orientations are associated with different levels of PTSD severity. Attachment insecurity may increase the risk of developing PTSD, just like it may affect the way one adapts to traumatic experiences and perceives social support during and after the traumatic event. Trauma may also affect attachment leading to attachment insecurities [6-8].

Attachment theory

Attachment orientations are shaped from early relationship experiences and are thought to be relatively stable throughout life [9]. Adult attachment orientations can be described as complex internal 'working models' of the 'self' and 'others', which affect the way we perceive threats, regulate emotions, and respond to stressors. Researchers agree on two attachment dimensions: attachment anxiety

(worry over the availability and positive regard of others) and attachment avoidance (discomfort with closeness and dependence on others) [4]. The anxiety dimension can be conceptualised as the "model of self" (positive vs. negative) and the avoidance dimension as the "model of others" (positive vs. negative). The combinations of the two dimensions define four attachment styles. Individuals with low levels of attachment anxiety (positive model of self) as well as low levels of attachment avoidance (positive models of others) are characterised as securely attached. Individuals with high levels of attachment anxiety and low levels of avoidance are characterised as preoccupied (with attachment), and individuals with both high levels of attachment anxiety and avoidance are characterised as fearful. Finally, individuals with low levels of anxiety and high levels of avoidance are characterised as dismissing [4].

Attachment orientations and PTSD

Attachment is seen as a determinant of psychological resilience in the face of stress, suggesting that attachment insecurities and PTSD may be associated in several inter-related ways. Scrutiny of the literature, however, indicates that the nature of this association is yet to be fully understood.

The hyper-activating strategies characterizing attachment anxiety may lead to hypervigilance, intensifying fear-related responses, and

***Corresponding author:** Ask Elklit, Professor, Department of Psychology, University of Southern Denmark, Campusvej 55, DK-5230 Odense M, Denmark, Tel: +45 6550 2320; E-mail: aeklit@health.sdu.dk

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rumination on threats, thereby intensifying emotional distress [9]. Indeed, empirical literature reveals a consensus regarding attachment anxiety (negative view of the self) as associated with the highest level of PTSD severity. This trend was found among samples of survivors of various traumas, such as whiplash accidents [10,11], terrorist attacks [12], institutional abuse [13], war captivity [14], childhood abuse [15], and intimate partner violence [16].

The link between attachment avoidance and PTSD is inconclusive. On the one hand, the regulation difficulties that characterise attachment avoidance may exacerbate posttraumatic reactions [9]. Research indeed provides evidence regarding the link between attachment avoidance and higher levels of PTSD severity. For example, a study conducted among former prisoners of war and their wives has found higher attachment avoidance associated with higher levels of PTSD symptoms [14]. Likewise, high-exposure survivors of the terrorist attacks on the World Trade Center on September 11, 2001 who were highly dismissing adults reported high levels of PTSD [17].

On the other hand, a number of studies have found attachment avoidance and dismissing attachment style, in particular, to be more similar to secure attachment in regards to PTSD severity [12,17-19]. In a study of 81 male security workers, Boegaerts et al. [18] found that both the securely attached and the dismissively attached had the lowest PTSD severity. In fact, the dismissing group had a 2.5 times lower likelihood of meeting the diagnostic criteria for a PTSD diagnosis compared to the other insecure attachment styles. Fraley and Bonanno [19] found that following the loss of a loved one, dismissing-avoidant adults, similar to secure individuals, exhibited relatively few symptoms of depression, anxiety disorders, or PTSD. Muller and Lemioux [19] found that attachment avoidance (having a negative view of others) was unrelated to PTSD severity in a sample of 66 individuals who had experienced childhood physical abuse.

Carr et al. [13] found that the dismissing attachment style was most similar to the secure attachment style; however it was still significantly and positively related to PTSD severity. Moreover, attachment styles could be ranked in the following order according to how strongly they were related to PTSD severity: secure, dismissing, preoccupied and fearful. Individuals with a positive view of the self (secure and dismissing) displayed the lowest PTSD severity, while those with negative views of the self-seemed to suffer the most from PTSD. A high level of PTSD severity in those with a fearful attachment style is supported by numerous studies (for a review see [9]). On the contrary, however, O'Connor and Elklit [20] found no significant associations between preoccupied attachment and PTSD severity, whereas fearful and dismissing attachments were positively associated with PTSD severity.

Attachment orientations and PTSD symptom clusters

Although a number of studies have examined the association between attachment insecurity and PTSD severity, fewer studies have investigated the associations between attachment dimensions and PTSD symptom clusters. In young adults exposed to missile attacks during the Gulf war, Mikulincer et al. [21], found that two weeks after the attack individuals with high levels of attachment anxiety had the highest levels of intrusive symptoms. Both attachment anxiety (ambivalent) and avoidance were associated with higher levels of PTSD avoidance compared to those who were securely attached. Also, Andersen et al. [10] found attachment-anxiety to correlate moderately with all PTSD symptom clusters. Mikulincer et al. [22] examined the causal relationship between attachment security before the U.S.-Iraq War in 2003 and the development of PTSD symptoms consecutively for 21 days. Additionally, context specific feelings of attachment security were

assessed daily and compared with the daily levels of PTSD symptoms. Anxiously attached individuals showed higher levels of PTSD intrusion, and individuals with an avoidant attachment style showed higher levels of PTSD avoidance. In addition, the feelings of attachment security on a given day weakened both PTSD intrusion and avoidance symptoms that day and the next. Similar results were found in a study of children with a history of disorganized (fearful) attachment in infancy. Following trauma exposure, they were more likely than children without a history of disorganized attachment to exhibit symptoms of PTSD at school age. Moreover, the disorganized attachment style significantly predicted higher levels of PTSD avoidance and re-experiencing [23].

Attachment orientations and PTSD – the moderating role of trauma types

The majority of trauma studies have found attachment security to be associated with the lowest levels PTSD symptoms [11,20,24]. However, as exposure to some traumatic events (such as rape, combat, physical abuse, and childhood neglect) is associated with a higher prevalence of PTSD compared to others, such as, accidents and disasters [2], this general view may not apply to all traumatic events.

Trauma type might moderate the link between attachment and PTSD severity. Specifically, one may speculate that while dismissing-avoidant adults may be as vulnerable as other insecure adults facing impersonal events, they may be relatively resilient to traumas that affect significant others or interpersonal trauma.

As dismissing-avoidant adults tend to be less invested in their significant others, there may be more resilience in the face of traumatic events that impact their significant other [19]. In addition, when it comes to interpersonal traumatic events, i.e., trauma which is induced by others, the dismissing attachment may have advantages. In these circumstances, the dismissing individuals' affective numbness may provide protection, which may actually help restore some sense of safety [25].

Research implies this possibility by demonstrating different patterns of associations between dismissing attachment and PTSD in different trauma types. While dismissing-avoidant adults have shown heightened distress and PTSD symptoms as a response to impersonal events of disasters and accidents [17], studies that included traumas affecting significant others or interpersonal trauma have revealed the resilience of dismissing attachment adults [19,25,26]. Fraley and Bonanno [19] found that in facing the loss of a loved one, dismissing-avoidant adults have exhibited relatively few symptoms of PTSD, similar to secure people. In addition, a study conducted among Palestinian former political prisoners has revealed that while dismissing attachment was associated with higher levels of PTSD, it was linked to a lower level of PTSD when facing psychological torture [25].

The present study aims to investigate the link between attachment and PTSD while taking into account the trauma type and assessing its role as moderator. In addition, the present study intends to overcome some of the limitations which are often found in empirical literature on attachment and PTSD. As the convergence between the AAI and self-report measures of attachment is small, gaps are found between studies which apply different methods. For instance, self-reported attachment anxiety was associated with unresolved trauma but not loss as found with the AAI [27]. Hence, the use of different measures for attachment security compromises direct comparisons of results. Additionally, not all studies are comparable with respect to age and gender, which may be problematic, since gender and age are both related to PTSD [28]. Another limitation in many studies is small sample sizes. Finally,

most studies are conducted in relation to war traumas or interpersonal violence. All of these factors are potential confounders that make it difficult to draw strong conclusions about the different attachment dimensions and styles and how they are associated with PTSD.

Aims and Hypotheses

The present study investigates the associations between both attachment dimensions and the four attachment styles and the different PTSD symptom clusters in multiple trauma samples with a large total sample size, all using the same measures, and while controlling for age and gender.

Hypotheses

First, we hypothesise that attachment security is associated with the lowest level of PTSD severity. Second, we predict that all the insecure attachment styles are positively associated with PTSD severity, however, to different degrees. We expect that the fearful style will be associated with the most severe PTSD, followed by the preoccupied, and finally the dismissing with least severe PTSD. Third, we expect that both attachment anxiety and attachment avoidance are positively related to PTSD severity; however attachment anxiety is expected to be associated with the most severe PTSD. Fourth, we predict that attachment anxiety is most strongly associated with intrusion and hyperarousal, and attachment avoidance with PTSD avoidance. Finally, we expect trauma type to moderate the association between attachment and PTSD severity, so that while high attachment dismissal avoidance will be linked with more severe PTSD among survivors of non-interpersonal traumatic events (i.e., survivors of diseases), it will be associated with less severe PTSD among survivors of traumatic events which involve significant others (i.e., survivors of family illness) or interpersonal trauma (survivors of violent assaults).

Method

Participants and procedure

The sample consisted of participants from 10 individual studies

of trauma samples in Denmark. The total sample included 3735 participants, of which 2385 (64.2%) were female. The age of the participants ranged from 12 to 80 years (mean=37.48, SD=12.62). All studies were questionnaire-based and conducted in different trauma populations, covering various traumas in the categories of violent assault, family illness and disease. Time since the traumatic event ranged between 5 days to 7 months for violent assault, 30 days to 5 years for family illness, and 5 years to 7 years for disease. For a detailed overview of the trauma samples, see Table 1 (a total list of published studies can be required from the corresponding author). The research protocol was approved by the review board of the University of Southern Denmark. Furthermore, all participants in the study volunteered freely.

Measures

All participants were assessed with a wide range of measures, but notably, all participants completed the Harvard Trauma Questionnaire [29], which was used for assessing PTSD-symptoms, and The Revised Adult Attachment Scale (RAAS) [30] which was used for assessing attachment.

The Harvard Trauma Questionnaire (HTQ) [29] consists of 30 items. The initial 16 items of the HTQ mirrors the diagnostic symptom criteria for PTSD in the DSM-IV and covers the symptom clusters of intrusion, avoidance, and hyperarousal. The items are answered on a 4-point Likert scale (1=not at all; 4=very often). The total HTQ-score, and thereby the level of PTSD-symptoms, is calculated by summing the scores of the first 16 items. Hence, the possible maximum PTSD score is 64. Participants are considered as meeting diagnostic criteria if they fulfil the criteria of one or more intrusive symptoms, three or more avoidance symptoms, and two or more hyperarousal symptoms. Only item scores ≥ 3 count for the diagnosis. The HTQ has been found to have excellent validity and reliability, resulting in 88% concordance rates with interview-based assessments of PTSD [29]. The Danish version of the HTQ has proved to be a valid and reliable measure [31], and has been used in several trauma studies. In the current sample of diverse trauma populations, the internal validity as expressed by Cronbach's alpha was excellent for the overall scale (α=0.91) and very good for the subscales (intrusion: α=0.80, avoidance: α=0.83, hyperarousal: α=0.85).

Trauma Samples	N	Male	Female	Age
		n (%)	n (%)	M, (SD)
Violent assault	385	143 (37.1)	242 (62.9)	19.08 (4.76)
Knife homicide at a high school	320	121 (37.8)	199 (62.2)	17.99 (1.05)
Robbery victims	65	22 (33.8)	43 (66.2)	24.46 (9.72)
Family illness	1373	698 (51.5)	657 (48.5)	35.06 (10.43)
Parents who have lost an infant (Hospital)	124	48 (43.6)	62 (56.4)	31.56 (4.77)
Parents who have lost an infant (association for infant loss)	686	295 (43.0)	391 (57.0)	34.08 (6.13)
Cancer patient relatives	251	186 (74.1)	65 (25.9)	41.33 (16.8)
Elderly bereaved	207	89 (43.8)	114 (56.2)	31.53 (12.48)
Families with chronically ill children	105	39 (37.1)	66 (62.9)	35.74 (6.36)
Disease and physical health	1977	531 (29.6)	1445 (73.1)	42.69 (11.07)
Whiplash victims	1710	360 (21.1)	1349 (78.9)	43.10 (10.3)
Adolescent and young adults surviving childhood cancer	44	19 (43.2)	25 (56.8)	21.26 (5.51)
Paraplegics	223	152 (68.2)	71 (31.8)	43.84 (13.23)
Total / average	3735	1331 (35.8)	2385 (64.2)	37.48 (12.62)

Table 1: Trauma types distributions.

The Revised Adult Attachment Scale is an 18-item self-reports measure for assessing closeness of relations and attachment to significant others. Questions are answered on a 5-point Likert scale (1=not at all; 5=very characteristic). Twelve items measure attachment avoidance ($\alpha=0.66$), and six measure attachment anxiety ($\alpha=0.81$). Attachment security is defined by a combined score, below midpoint < 36 on attachment avoidance and a score below midpoint < 18 on attachment anxiety. The preoccupied attachment style is defined by a combined score, below midpoint < 36 on attachment avoidance and a score above midpoint > 18 on attachment anxiety. The fearful attachment style is defined by a combined score above midpoint > 36 on attachment avoidance and above midpoint >18 on attachment anxiety. The dismissing attachment style is defined by a combined score above midpoint >36 on attachment avoidance and below midpoint < 18 on attachment anxiety [30].

Statistical analysis

All statistical analyses were conducted in SPSS version 19. Distribution of the data is expressed through percentages, means, and standard deviations. We investigated hypotheses 1 and 2 regarding the relationship between attachment types and qualifying for a PTSD diagnosis and PTSD severity through Pearson's chi-square test and One-Way Analysis of Covariance (ANCOVA). Our third and fourth hypotheses of the associations between attachment anxiety and attachment avoidance and PTSD total severity as well as PTSD clusters were tested through hierarchical multiple regression models. Lastly, we tested the moderation role of trauma type within the association between attachment and PTSD symptom severity by conducting Two-Way Analysis of Covariance (ANCOVA).

Results

Trauma types, attachment style PTSD diagnosis and PTSD severity

Before investigating the study's hypotheses, we assessed the associations between trauma types and attachment style, PTSD diagnosis and PTSD severity, by conducting Pearson's chi-square tests and One Way Analysis of Variance (ANOVA).

Pearson's chi-square test indicated significant association between

trauma types and attachment style (χ^2 (6, N=2924)=866.64, $p<0.001$, Cramer's $V=0.39$). As seen in Table 2, the distribution of attachment styles varied across trauma types. Most notably, while the secure attachment style expectedly was the most prevalent style in trauma groups of violent assault and family illness, it was significantly less prevalent in the disease and physical health category. Moreover dismissing attachment was more prevalent among survivors of disease and physical health compared to survivors of violent assault and family illness.

Pearson's chi-square test indicated significant association between trauma types and PTSD diagnosis (χ^2 (2, N=3280) =72.99, $p<0.001$, Cramer's $V=0.15$). As seen in Table 2, PTSD prevalence varied across the trauma types, with the disaster group showing the lowest prevalence among violent assault group, followed by the family illness group. The disease and physical health category displayed the highest PTSD prevalence.

ANOVA revealed the same pattern for the average PTSD level, with the violent assault group showing the lowest PTSD severity followed by family illness group , and disease and physical health group (F (2, 3277)=88.78, $p<0.001$).

Attachment and PTSD

In order to investigate the first and second hypotheses regarding associations between attachment and PTSD diagnosis and PTSD severity we conducted chi-square test, and One Way Analysis of Covariance (ANCOVA).

Analyses supported the first and second hypotheses. Chi-square test indicated significant differences in the prevalence of those qualifying for a PTSD diagnosis across the attachment types (χ^2 (3, N=2648)=150.21, $p<0.001$, Cramer's $V=0.238$). As can be seen in Table 3, the secure attachment group reported the lowest prevalence for a PTSD diagnosis, followed by dismissive group, preoccupied group, and finally the fearful group which had the highest prevalence of PTSD diagnosis.

In order to assess the differences between attachment styles in PTSD severity ANCOVA was conducted. Age and gender were included as control variables. The analysis indicated significant differences in PTSD severity across the attachment types (F (3, 2624) =74.58, $p<0.001$). The secure attachment group reported the lowest PTSD severity, followed by the dismissive group, preoccupied group, and finally the fearful group which had the highest level of PTSD severity.

Trauma Category	Attachment type prevalence	PTSD prevalence	PTSD severity
	n (%)	n (%)	M (SD)
Violent assault	Secure: 191 (73.5)	43 (12.2)	29.11 (9.42)
	Dismissive: 5 (1.9)		
	Preoccupied: 52 (20.0)		
	Fearful: 12 (4.6)		
Family illness	Secure: 827 (72.2)	299 (25.6)	31.93 (10.97)
	Dismissive: 168 (14.7)		
	Preoccupied: 83 (7.2)		
	Fearful: 67 (5.9)		
Disease and physical health	Secure: 339 (22.3)	592 (33.6)	35.82 (10.09)
	Dismissive: 852 (56.1)		
	Preoccupied: 157 (10.3)		
	Fearful: 171 (11.3)		
Total	Secure: 1357 (46.4)	934 (28.5)	33.72 (10.60)
	Dismissive: 1025 (35.1)		
	Preoccupied: 292 (10.0)		
	Fearful: 250 (8.5)		

Table 2: Trauma types and prevalence of attachment style and PTSD diagnosis.

	PTSD prevalence	PTSD severity		
	n (%)	M	SD	Group Comparisons
Attachment style				
Secure	255 (20.9)	30.95	10.66	a<b<c<d
Dismissive	254 (26.9)	33.64	9.44	
Preoccupied	100 (38.5)	37.3	10.66	
Fearful	131 (58.7)	41.41	9.29	

Note: Group comparisons compares the mean level of the PTSD severity in each group of attachment style: a: Secure; b: Dismissive; c: Preoccupied; d: Fearful.

Table 3: Attachment style, PTSD diagnosis and PTSD severity.

Attachment dimensions and PTSD

In order to investigate the third and fourth hypotheses regarding the associations between attachment dimensions and PTSD severity as well as PTSD clusters (intrusion, avoidance, and hyperarousal), four hierarchical multiple regression models were conducted. We first created two dummy variables for violence assault and family illness to account for the effect of the trauma type with "disease and physical health" serving as the reference category. Before entering the attachment dimensions, age and gender were entered in the first step of the model, whereas two dummy variables of violence assault and family illness were entered in the second step to control for the role of age, gender, and trauma-specificity in predicting PTSD severity as well as PTSD clusters. The regression models can be seen in Table 4.

From the four regression models predicting the individual symptom clusters of PTSD, it is clear that both attachment anxiety and attachment avoidance significantly predict PTSD total symptoms and all three clusters. However, the contribution of the attachment anxiety in predicting levels of symptoms is stronger than attachment avoidance for PTSD total symptoms and all three clusters. The attachment dimensions are most powerful as predictors of the avoidance cluster (9% of the variance), less powerful in predicting hyperarousal (7% of the variance) and least powerful in predicting intrusion (4% of the variance).

Trauma type as moderator in the association between Attachment and PTSD

In order to examine the moderation role of trauma type within the association between attachment styles and PTSD severity differences, PTSD severity level as a function of attachment group, and trauma type, we conducted a Two-Way Analysis of Covariance (ANCOVA). Age and gender were included as control variables. As can be seen in Table 5, the analysis revealed significant effect for interaction between attachment groups and trauma types $F(6, 2616) = 6.117, p < 0.001$. Simple main effects tests revealed that while among trauma survivors of family illness the securely attached group showed the lowest PTSD severity compared to other attachment groups (dismissive and fearful), among trauma survivors of disease and physical health, the dismissively attached individuals showed the lowest level of PTSD severity compared to other attachment groups (secure, pre-occupied and fearful). Among the violent assault group, significant differences were found only between secure and pre-occupied and fearful, with securely individuals showing low PTSD severity compared to pre-occupied and fearful, and the average level of PTSD among the dismissive individuals was the lowest.

Discussion

The findings of the present study revealed association between

attachment and PTSD severity. Overall, a secure attachment style is related to less severe PTSD, whereas the insecure attachment styles are related to more severe PTSD. Both dimensions of attachment were associated with PTSD severity and PTSD clusters. However, the anxious dimension had greater contribution in predicting PTSD severity and PTSD clusters than the avoidant dimension. More importantly, trauma type moderated the association between attachment and PTSD. While among trauma survivors of family illness the securely attached group showed the lowest PTSD severity, among trauma survivors of disease and physical health, the dismissively attached individuals showed the lowest level of PTSD severity compared to other attachment groups.

Association between Attachment and PTSD

Overall, when not accounting for trauma type, secure attachment style was found to be related to less severe PTSD, whereas the insecure attachment styles are related to more severe PTSD. Consistent with prior research [12,32], dismissing attachment was found to be related to more severe PTSD than the secure attachment. The preoccupied group displayed an even higher PTSD severity level, while the highest PTSD severity level was found in the fearful attachment group.

Our findings give support to the notion that secure attachment might act as an important protective factor against the development of PTSD after exposure to traumatic event. Regarding attachment as a personal resource suggests that secure attachment enhances resilience in the face of trauma. The optimal functioning of the attachment system of secured individual enables the person who faces threatening events to feel relatively safe and secure. The mobilization of internal representations of security-providing attachment figures and/or actual external sources of support enables effective strategies of affect regulation, and efficient coping which lead to restoration of emotional balance [22]. Adding to knowledge gained from earlier studies [11,17,20,24,32], our study finds that the protective quality of secure attachment is valid across several trauma types.

Attachment dimensions, PTSD severity and PTSD clusters

Our results reveal that although both attachment dimensions were related to PTSD severity, attachment anxiety is a stronger predictor of PTSD severity than attachment avoidance.

The present results which are consistent with previous studies [10-16], might imply the importance of the perceptions of the self in regards to posttraumatic reactions. One can speculate that the negative view of the self which characterise attachment anxiety increases the individual's vulnerability in the face of adversity. Hence, heightened attachment anxiety is associated with more PTSD symptoms. Less strong, albeit still significant, was the relationship between attachment avoidance and

Predictor	ΔP^2	β^a	Total adjusted R^2
Total symptoms			
STEP 1	0.06***		
Gender		-0.14***	
Age		0.12***	
STEP 2b	0.02***		
Family illness		-0.02	
Violent assault		-0.09***	
STEP 3	0.10***		0.18***
Attachment anxiety		0.28***	
Attachment avoidance		0.14***	
Intrusion			
STEP 1	0.01***		
Gender		-0.12***	
Age		0.10***	
STEP 2b	0.06***		
Family illness		0.34***	
Violent assault		0.19***	
STEP 3	0.04***		0.11***
Attachment anxiety		0.19***	
Attachment avoidance		0.09***	
Avoidance			
STEP 1	0.04***		
Gender		-0.07***	
Age		0.08***	
STEP 2			
Family illness		-0.05*	
Violent assault	0.02***	-0.08***	
STEP 3	0.09***		0.15***
Attachment anxiety		0.28***	
Attachment avoidance		0.13***	
Hyperarousal			
STEP 1	0.12***		
Gender		-0.18***	
Age		0.10***	
STEP 2			
Family illness		-0.24***	
Violent assault	0.10***	-0.20***	
STEP 3	0.07***		0.28***
Attachment anxiety		0.24***	
Attachment avoidance		0.11***	

Note: ^aAll β -values are final values b Reference category in Step 2 is "disease and physical health" ...Significant at the .001 level.

Table 4: Hierarchical multiple regression analyses predicting level of the PTSD clusters.

PTSD symptoms, implying that a negative view of others necessitates PTSD severity to a smaller degree than a negative view of self. Indeed, Muller and Lemieux [19] found that attachment avoidance (a negative view of other) was unrelated to PTSD severity. As such, when trying to predict PTSD severity after a traumatic event, the individual's view of self seems to be more important than the individual's view of others. Contrary to our hypothesis, we did not find PTSD symptom clusters to be dependent on the attachment dimensions. Our results revealed that both the anxious and avoidance dimension predict all three symptom clusters. These findings were inconsistent with findings of previous prospective study on Israelis' psychological reactions during the 2003 U.S.-Iraq war [21] which revealed attachment anxiety dimension to be associated with intrusion and hyperarousal symptoms while attachment avoidance dimension to be associated with avoidance

symptoms. A reason for this gap might be the very different contexts in which the trauma symptoms were measured. Mikulincer et al. [21] measured trauma related intrusion and avoidance during the war for 21 consecutive days. The attachment behaviours and the activation of attachment related cognitions might be stronger in such a life-threatening context compared to our retrospective design.

The Moderator role of trauma type

The main contribution of the present study, however, was the assessment of the moderator role of trauma type within the associations between attachment styles and PTSD severity. The present results indicated that while among trauma survivors of family illness the securely attached group showed the lowest PTSD severity compared to other attachment groups (dismissive and fearful), among trauma survivors of disease and physical health, the dismissively attached individuals showed the lowest level of PTSD severity compared to other attachment groups (secured, pre-occupied and fearful).

Our results support the claim held by some scholars regarding the potential advantages of dismissing attachment style [19,25,33]. It seems that the dismissing-avoidant adults, who are characterized by compulsive self-reliance, may be relatively resilient to some kinds of traumatic event and thus report lower levels of PTSD symptoms. Nevertheless, the present findings raise questions regarding the nature of the traumatic event, to which dismissing-avoidant individuals seem to be resilient.

According to Fraley et al. [33], as dismissing-avoidant adults tend to be less invested in close relationships, they may be more resilient in the face of attachment-related trauma. According to Kaninnen et al. [25], dismissing attachment style might act as protective factor in interpersonal trauma such as emotional and psychological torture. Although we did not assess any distinctively, severe interpersonal trauma in the present study, we did, however, include survivors of violent assaults which might be considered an interpersonal trauma. In addition, we included survivors of family illness and loss which represent survivors of attachment-related trauma.

Our results are consistent only partially with previous findings [19,25]. Contrary to former studies, the present results did not indicate better adjustment for the dismissing-avoidant adults following the attachment-related trauma of family illness and loss. On the other hand, one should note, that although non-significant, a pattern of lowest average severity PTSD levels in the dismissing-avoidant adults within the trauma groups violent assault was found. Thus, the present results imply the possible positive effect of dismissal attachment in regards to interpersonal trauma. It might be that the dismissing individuals' affective emotional detachment may provide protection in the face of interpersonal trauma [25].

Yet, results of the present study indicated that the advantages of dismissal avoidance attachment come into play facing traumatic events of disease and physical health. As one could label the trauma of disease and physical health as a personal trauma, relating to factors within the person, the present results appear to be unpredicted and surprising. However, considering the effects of suffering from disease on the social realm and of the potential overlap between attachment and physical pain, this can provide explanations for the present results.

Suffering from serious disease may increase feelings of loneliness and isolation. The ill individual is often disabled and finds it hard to perform activities, including those that help to maintain social relationships. Moreover, as the ability to communicate somatic experience of physical pain is often limited, the experience of disease might be isolating [34].

	Secure M (SD)	Dismissive M (SD)	Preoccupied M (SD)	Fearful M (SD)	F (df1,df2)	η_p^2	Group differences
Violent assault	26.37 (8.17)	25.33 (1.15)	31.62 (8.78)	36.64 (9.51)	7.38*** (3,236)	.09	a<c,d
Family illness	30.25 (10.84)	34.29 (9.56)	35.39 (10.26)	40.54 (9.95)	24.73*** (3,999)	.07	a<b<d
Disease and physical health	35.26 (10.07)	33.54 (9.41)	40.18 (8.95)	42.07 (8.95)	47.37*** (3,1377)	.09	b<a<c,d

Note: The group differences column compares the mean level of the variable in each group; a: secured; b: dismissive; c: preoccupied; d: fearful * $p < .05$; ** $p < .01$; *** $p < .001$

Table 5: Means, SD and Univariate F results of PTSD severity for attachment groups according to trauma types.

These types of social difficulties accompanying disease and health problems could act as an additional source of stress increasing the risk for posttraumatic reaction. However, one can assume that these adversities do not have the same impact on differentiated attached individuals. While secured and anxious individuals (pre-occupied and fearful) might experience it as a significant threat, dismissed avoidant individuals, who are less invested in close relationship, might show resilience, and thus suffer from lower posttraumatic reactions.

Alternatively, the present findings may be understood with reference to the social pain theory [35]. According to the social pain theory, physical pain and social distress are based on a shared neurological system that developed through mammalian evolution. The system of social attachment, which increases a young mammal's chance of survival by encouraging caregivers to provide subsistence, evolved through the same neural pathways as the physical pain system [35]. This overlap is advantageous for survival because it enables the organism to respond to attachment threats in the same way as to physical danger. With regard to the present study, we may assume that physical suffering and disease, which are triggered by activation of pain pathways, may act as a signal for interpersonal threats and may lead to social distress. This possibility suggests viewing the trauma of disease as an attachment-related trauma which might expose the individual to intertwined physical and social pain. Thus, the advantages of dismissal attachment which were attributed to trauma involving attachment threats [33] might apply also in regards to disease. Dismissing adults might redirect attention away from the experience of social pain accompanying their physical suffering. In addition, as dismissing adults have less complex and accessible mental representations of their relational experiences, they might be less vulnerable to activation of attachment-related memories and feelings [33,36]. These, in turn, heighten the dismissing adults' resilience when facing disease, and lower their PTSD severity.

Limitations

The present study has several limitations. First, all data was cross-sectional questionnaire data and obtained retrospectively. An important limitation in the study was the underrepresentation of individuals exposed to interpersonal traumas. This limitation could limit the ability to detect the advantages of dismissal attachment in regards to PTSD severity. Moreover, only civilian trauma types were represented in the present study, making it difficult to compare results with studies of war traumas. Although a number of different trauma populations were included in the present study, one should be cautious about generalising the results because the individual trauma samples included in the present study may not be representative of the category to which they were ascribed. Finally, the retrospective nature of the attachment orientations is a limitation. It is possible that the traumatic event may have changed the individual attachment orientations. Hence, no conclusions about causality can be made.

Despite these limitations, the study also has several strengths. To

our knowledge, it is the only study to date that has included 10 different trauma populations using the same measures of attachment and PTSD. This made it possible to statistically adjust for trauma types and to compare attachment patterns across trauma samples. Moreover, the large sample size ($n=3735$) is a major strength. Also, the inclusion of civilian trauma samples is a strength, adding important knowledge to previous results, which primarily come from studies of war related traumas and interpersonal violence. Finally, the possibility to do the analyses with the attachment dimensions as well as the attachment styles in the same study across various trauma samples and in relation to all three PTSD symptom clusters is a major advantage.

Conclusions

Although no conclusion about causality can be made from the present study, our results underscore the importance of attachment orientations in understanding adaptations to traumatic experiences. Indeed, our findings have several clinical implications. Trauma focused interventions can be improved by taking attachment styles into consideration in treatment planning. In particular, individuals with negative models of self (preoccupied and fearful) may need additional support mobilising an internal sense of security. Moreover, the results above call attention to the possible protective role of a dismissive attachment style. Although dismissively- attached trauma survivors might be at risk for posttraumatic reactions when exposed to some of the traumatic events, they might show high resilience when facing interpersonal trauma and disease. In these circumstances, interventions aimed at fostering secure attachment might be maladaptive.

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