Acute Stress Disorder in Victims of Robbery and Victims of Assault

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The purpose of this study was to examine acute distress in a group of 65 shop employees, of which 72% had been victims of armed robbery and the others had suffered life-threatening circumstances, physical or psychological assault or captivity, or they had seen people being injured or killed. In all, 25% suffered from acute stress disorder. A number of associations were found between background variables (gender, age, marital status, education, and life events) and traumatization, symptomatology, defense style, social support, and coping style. Previous workplace training in relation to robbery was not associated with symptoms. Gender, marriage, contact to other victims, optimism, and anxiety explained 60% of the acute stress disorder variance.

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The number of robberies has been ascending in Denmark in recent years. Some years ago, robberies were concentrated especially in banks and post offices, but today's armed robberies often take place in supermarkets, gas stations, kiosks, and bakery shops. *Gunpoint* is a very expressive term used when a person points a gun at another, posing a threat to the other's life. Being held at gunpoint confronts most people with death anxiety, helplessness, and intense horror. This experience corresponds to the stressor criteria in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) (American Psychiatric Association, 1994) for acute stress disorder (ASD), where the described experience and the accompanying feelings are seen as the precipitating cause of a serious and often long-lasting disorder characterized by dissociation, intrusive images, avoidance, numbing, and hypervigilance.

Armed robbery in shops has been studied only in a few investigations; there are more studies of muggings, which in Denmark are quite rare but common in other countries. There exist only a limited number of published studies whose primary focus is the psychological sequelae of armed robbery (cf. Elklit, 1999), and none, according to *PsycINFO*, that study the relationship between robbery and ASD. There are a few good early sociological studies (e.g., Lejeune & Alex, 1973) within a *verstehende* tradition that emphasize the social changes that the robberies bring about and how victims are influ-

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enced by role expectations and demands from the surroundings. The assessments of the psychological impact of robbery are very divergent. One study does not find any negative consequences (Smith, DuRant, & Carter, 1978), whereas the majority find moderate to considerable psychological sequelae. The more comprehensive the studies, the more adverse symptoms are found.

Only two studies applied a control group (Beckmann, 1995; Kamphuis & Emmelkamp, 1998), and three studies were prospective (Davis, Taylor, & Lurigio, 1996; Leymann, 1985; Lurigio & Resick, 1990; Resick, 1988). Three studies (Kilpatrick et al., 1985; Resick, 1988; Wirtz & Harrell, 1987) concluded that victims of robbery in many respects resembled other victims of violence and assault. One important result was that attempted robberies seemed to have just as much affect as completed robberies (Kilpatrick et al., 1985). Age was not found to be an influential factor by Cohn (1974) and Harrison and Kinner (1998), whereas Beckmann (1995) demonstrated that increasing age was associated with a number of adverse symptoms, as was low level of education (Davis et al., 1996) and low socioeconomic status (Harrison & Kinner, 1998). Leymann (1985), Cohn (1974), and Beckmann (1995) also demonstrated that female robbery victims were more vulnerable. This is in contrast to Resick (1988) and Harrison and Kinner who did not find gender differences. The experience of life endangerment during the robbery was associated with an ascending number of psychological symptoms (Davis et al., 1996; Freedy, Resnick, Kamphuis & Emmelkamp, 1998; Kilpatrick, Dansky, & Tidwell, 1994). Kamphuis and Emmelkamp also found that previous serious life events were negatively associated with later outcome. Vulnerability attributions have been demonstrated to correlate positively with measures of traumatization by Harrison and Kinner. Avoidant coping and low level of perceived social support were positively associated with adverse symptoms (Harrison & Kinner, 1998; Kamphuis & Emmelkamp, 1998).

There is a lack of studies that investigate the immediate reactions in relation to the existing environment. Only Leymann (1985) has approached the study of acute reactions immediately after the robbery, while other studies have studied reactions after 1 month. With *DSM-IV*, the interest in acute reactions has been sharpened. Findings based on acute reactions are particularly valuable for psychologists who have to assess these reactions when they are "on the stage" in acute crisis intervention. The short summary of the above studies also contains several contradictory results related to the degree of impact resulting from experiencing a robbery, demographic factors, and so forth, but there seems to be less discrepancy in relation to the influence of peritraumatic and posttraumatic factors. Some of the factors can be explained by methodological differences, but one should be aware, as the

verstehende tradition is, of possible cultural differences. One aspect that might deserve special attention is determining which factors during the robbery are especially decisive for the development of traumatic stress reactions. Another is whether robbery is a distinct case of violent assault that needs special understanding, or it has so much in common with other types of assault that it could probably be conceived as a minor variety within the larger group of violent assaults? The aim of this study is to examine the level of acute stress in a sample of robbery victims and victims of violent assaults and to investigate to what degree demographic factors, peritraumatic factors, acute reactions, social support, coping strategies, defense styles, and various symptoms can be predictable of traumatization (ASD) after a robbery or a violent assault at the workplace.

METHOD

Procedure and Sample

A number of robbery victims and victims of violent assaults receive acute crisis intervention from Dansk Krisekorps, which is a small company that has contracts with a number of shops and employs a network of psychologists, who turn out when there has been an armed robbery or another violent incident at the workplace. Whenever the shop has contacted Dansk Krisekorps, the crisis intervention by contract takes place within 24 hours, usually within 4 to 6 hours. In the 2-year period, there were 87 calls about assistance after robbery, violent assault, accidents, and so forth, mainly in supermarkets. Half of the victims received help within 5 days, the rest within 7 to 23 days. In 2 cases, help was not required until later. These 2 cases were discarded. During a period of 2 years, from 1996 to 1998, all of the victim employees received a questionnaire from the psychologist as part of the immediate crisis intervention. The questionnaire was used for an immediate screening of the condition of the client. If the questionnaire revealed that the client had considerable problems, the client was offered further assistance. The questionnaires were well completed and the open questions contained much valuable information.

In all, 66 victims filled out questionnaires. The response from 1 person was not usable, reducing the number of participants to 65. The 65 questionnaires represented 70% of the number of these calls and approximately two thirds of the persons with whom there was a therapeutic relation. The average age of the participants was 24.5 years with a range from 15 to 51 years and a median of 21 years. Regarding gender, 34% were men, and 66% were

women. The average number of educational years was 12.1 with a range from 7 to 17 years. The number of years in the workplace was 3.6 years with a range from 0 to 29 years and a median of 1.5 years. The occupational status was 3% return deposit bottle boys; 59% shop workers, typically working as cashiers; 22% responsible for the supply of goods; and 14% managers. The marital status was 36% single, 30% married or cohabiting, and 22% living with their parents or elsewhere.

Instruments

Questions were designed to measure demography (age, gender, education, marital status, and type and years of work) and background information. This included details of the violent incident, the *DSM-IV* A_2 stressor criteria of the ASD diagnosis, the family response, contact with assisting authorities after the trauma, prior similar experiences, occupational training for meeting violent situations, and the occurrence of a serious life event within the past 12 months. Four 7-point Likert-type scale questions were asked about (a) anxiety during the incident, (b) present feeling of security, (c) satisfaction with the information and support from the management, and (d) satisfaction with the workplace. Degree of optimistic attitude toward life was measured by a 4-point Likert-type scale question. A tentative measure of trauma severity was constructed by assigning a weight to each of the following stressors and combining the scores into an index: threats of violence = 1, psychological violence (humiliation, harassment) = 2, physical violence (beaten, kicked) = 3, robbery = 4, being held captive = 5, witnessing someone being injured by the perpetrator = 6, witnessing homicide = 7.

The Harvard Trauma Questionnaire–Part 4 (HTQ) (Mollica et al., 1992) is a simple and reliable screening instrument for identifying posttraumatic reactions. It is culturally sensitive and has good construct, convergent, and discriminant validity. The inventory consists of 30 questions, 16 of which relate to core dimensions of ASD: intrusion, avoidance, numbing, and hypervigilance. The answers are rated on a 4-point Likert-type scale ranging from *rarely or never* to *most of the time*.

The Crisis Support Scale (CSS) (Joseph, Andrews, Williams, & Yule, 1992) is used for rating the experience of perceived social support after a traumatic event through seven items. The items include perceived availability, received emotional support, received practical support, contact with people in a similar situation, the ability to express oneself, the experience of being let down, and general satisfaction with social support. The items are rated on a 7-point Likert-type scale, ranging from *never* to *always*. The CSS has been used in several disaster studies: It has good internal consistency as well as good

discriminatory power. Elklit, Pedersen, and Jind (2001) analyzed 4,213 CSS questionnaires from 11 studies. The results confirmed the psychometrical reliability and validity of the CSS.

The Impact of Event Scale (IES) was developed by Horowitz, Wilner, and Alvarez (1979) and measures two core dimensions of traumatic stress: intrusion and avoidance. The IES contains 15 questions that are answered by means of a 4-point Likert-type scale ranging from *not at all* to *often* with values ranging from 0, 1, 3, and 5. It is one of the most widely used scales to assess the impact of traumatic events (Dyregrov, Kuterovac, & Barath, 1996).

The Trauma Symptom Checklist (TSC) owes its origin to Briere and Runtz (1989). The 33 questions of the TSC measure the occurrence of depression, anxiety, dissociation, sleep problems, somatization, interpersonal sensitivity, and hostility (Elklit, 1990). The answers are stated on a 4-point Likert-type scale from *no* to *very often*. The TSC has good psychometric qualities and appears to be a valid instrument for the effects of traumatization (Elklit, 1994).

The Coping Style Questionnaire (Joseph, Williams, & Yule, 1992) is an instrument that maps the application of coping strategies. The questions are grouped in three broad coping subscales: (a) rational problem solving, (b) emotional, and (c) avoidant. Rational problem solving and avoidant each build on 10 items, and emotional builds on 9 items (1 of the items about faith was removed). The answers are reported on a 4-point Likert-type scale from *no, never* to *almost always*. Until now, the psychometric qualities of the Coping Style Questionnaire were investigated only to a limited degree. The internal consistency and the discriminatory ability of the items are reported in Table 1. Cronbach's alpha was only .60 for the emotional subscale. The removal of Item 10, "I made jokes of what happened," improved the alpha to .65, so this item was removed from the following analysis.

The Defense Style Questionnaire–40 was created by Andrews, Singh, and Bond (1993). The answers measure 20 defense mechanisms, which can be divided into three groups: mature, neurotic, and immature. The answers in the Defense Style Questionnaire–40 are stated on a 9-point Likert-type scale that spans from *strongly disagree* to *strongly agree*. A number of statistical analyses have demonstrated that the Defense Style Questionnaire–40 is a fine instrument in good accordance with clinical assessment of clients (Elklit, 2002b).

ASD was assessed by a number of items from the HTQ, which cover the *DSM-IV* ASD symptom groups of intrusion, avoidance, numbing, and arousal, and from the TSC, which contributed to dissociative and impairment items (see the appendix). All symptoms were rated on 4-point Likert-type scale. Only scale items greater than or equal to 3 were counted toward an

TABLE 1: Descriptive Statistics

Scale	*Number of Items*	*Range*	*Average*	SD	n	α	*Interitem Correlation*
HTQ							
Intrusion	4	4-11	9.65	2.93	62	.78	.47
Avoidance	8	8-27	14.17	5.38	59	.86	.44
Hypervigilance	5	5-15	12.34	4.02	61	.82	.48
Total	31	32-101	58.07	19.14	54	.95	.40
IES							
Intrusion	7	0-35	15.49	9.58	61	.88	.51
Avoidance	8	0-32	11.24	8.39	58	.78	.31
Total	15	0-61	26.70	15.65	57	.88	.32
DSQ							
Mature	8	22-62	44.35	9.28	57	.58	.15
Neurotic	8	12-59	38.70	9.61	57	.58	.15
Immature	24	36-137	88.92	25.23	49	.81	.15
TSC							
Anxiety	8	9-27	14.40	4.31	53	.71	.26
Depression	10	10-36	17.39	6.38	54	.88	.42
Dissociation	7	7-25	12.27	4.15	56	.81	.37
Hostility	4	4-10	5.40	1.80	63	.62	.29
Interpersonal sensitivity	7	7-24	12.05	4.14	56	.82	.40
Sleeping problems	4	4-16	6.98	3.04	64	.85	.58
Somatization	7	7-27	11.63	4.29	62	.84	.44
Total	35	38-104	57.46	17.53	48	.95	.35
CSQ							
Rational	10	18-40	29.16	5.38	51	.74	.22
Emotional	9	12-33	23.16	4.20	55	.60	.14
Avoidant	10	15-40	32.85	4.85	59	.74	.22

NOTE: HTQ = Harvard Trauma Questionnaire—Part 4; IES = Impact of Event Scale; DSQ = Defense Style Questionnaire–40; TSC = Trauma Symptom Checklist; CSQ = Coping Style Questionnaire.

ASD diagnosis, with the exception of dissociative items, which were counted at greater than or equal to 2 (cf. Brewin, Andrews, Rose, & Kirk, 1999).

RESULTS

Types and Aspects of Events

A χ^2 analysis was conducted to determine if direct exposure robbery victims differed from victims of violent assault on all demographic and life

event variables. Results indicated that this was not the case, so the respondents were treated as one homogeneous group.

The most common single event of direct exposure was robbery, which happened to 39 (60%), followed by threats to life ($n = 22$, 34%), psychological violence ($n = 14$, 22%), being held captive and physical violence (both, $n = 7$, 11%). And 75% had witnessed violence that happened to someone else (indirect exposure): 18 (28%) had witnessed robbery, 11 (17%) had witnessed someone in a life-threatening situation, 8 (12%) had seen people being beaten or kicked, 6 saw somebody getting injured, and 3 had witnessed homicide. Also, 31 (48%) had the experience of feeling totally helpless during the episode, and 23% thought they were going to die. Adding the variable anxiety during the incident, in the degree greater than or equal to 6, to the preceding variable, the fulfillment of any of these two stressor criteria constituted the final A_2 ASD stressor criterion.

The employees generally were well assisted by the triangle: police, management, and psychologist. Only about 10% of the incidents involved shop stewards or safety representatives. Other authorities or agencies were rarely called in. Within the past year, significant life events such as serious illness, divorce, losing a job, and so forth were mentioned by 62% of the respondents: 23% mentioned one of these events, 19% mentioned two, 9% mentioned three, and 11% mentioned four or five.

ASD

In all, 63% met the *DSM-IV* A_2 stressor criterion of the ASD diagnosis, 73% met the dissociative criterion, 87% met the criterion of intrusion, 38% met the avoidance criterion, and 87% met the criterion of hypervigilance. Also, 14% were in a low-symptom group where only one of the re-experiencing, avoidance, and arousal core criteria of the ASD diagnosis was met, whereas only 7% were almost free of symptoms in relation to ASD. When the dissociative criterion was added, the number of cases dropped from 38% to 28%. When the A_2 stressor and the functional impairment criteria were also added, 25% achieved the ASD diagnosis. The internal consistency for the ASD subscales was moderate to high: dissociation ($\alpha = .89$), intrusion ($\alpha = .84$), avoidance ($\alpha = .70$), hypervigilance ($\alpha = .82$), and impairment ($\alpha = .64$). The convergent validity measured as the correlation between the ASD scale and IES ($r = .73$, $p < .0005$) was very good.

Level of Distress and Mediating Factors

Table 1 shows the mean, *SD*, Cronbach's alpha, inter-item correlations, and subscale basic data for the applied scales. For the HTQ, the comparative scores (average divided by the number of items) were intrusion = 2.41, avoidance = 2.02, and hypervigilance = 2.47 (e.g., the extent of intrusion and hypervigilance was approximately the same, whereas the level of avoidance was somewhat less).

With the IES, the proportion between the intrusion subscale and the avoidance subscale scores was 3 to 2, a parallel to the HTQ.

For the seven subscales of TSC, the comparative scores were anxiety = 2.01, depression = 1.74, dissociation = 2.48, sleeping problems = 1.72, hostility = 1.35, interpersonal sensitivity = 1.72, and somatization = 1.66.

The number of mature defense mechanisms was higher than the number of neurotic defense mechanisms. The number of reported immature defense mechanisms was approximately twice as high as the number of stable mechanisms.

Coping style encompasses the rational, the emotional, and the avoidant subscales. The comparative scores were rational = 2.92, emotional = 2.57, and avoidant = 3.29. All three coping styles were commonly used with avoidant coping the most prevalent, followed by rational coping, while emotional coping had the least prevalence.

The degree of experienced contact and social support was high. Almost everybody had the experience of finding somebody who was willing to listen ($M = 6.3$) and express sympathy ($M = 6.3$). Most were able to talk about their feelings and their thoughts ($M = 5.5$) and felt better after having talked with people who they expected to be supportive ($M = 5.4$). Many also received practical help ($M = 5.4$). The question of contact with someone else in a similar situation got the lowest score ($M = 4.3$).

Age was negatively associated with level of traumatization (HTQ, total, $r = -.30$, $p < .05$), anxiety ($r = -.27$, $p < .05$), hostility ($r = -.38$, $p < .005$), and interpersonal sensitivity ($r = -.38$, $p < .0005$). Female gender was associated with higher levels of somatization ($r = .28$, $p < .05$), interpersonal sensitivity ($r = .26$, $p < .05$), and depression ($r = .31$, $p < .05$). Level of education was associated with most TSC subscales ($r = .28$ to $.39.$, $p < .05$). Number of serious life events was positively associated with traumatization (HTQ, total, $r = .89$, $p < .0005$) and all TSC subscales ($r = .31$ to $.52$, $p < .05$ to $.0005$). The number of serious life events was related to hostility ($\chi^2 = 26.5$, $p < .01$) in a

curvilinear fashion in the way that those who either had not experienced any or had experienced several life events are less hostile than those who had just experienced one life event.

If a respondent had experienced several stressors during the event, the number of depressive reactions increased ($r = .31$, $p < .05$), but otherwise the trauma severity index was totally unrelated to the HTQ and TSC subscales. The subjective experiences of death threat and helplessness, however, were significantly associated with an increased prevalence of all seven TSC subscales ($r = .35$ to $.59$, $p < .005$) and a lower occurrence of problem solving ($r = –.36$, $p < .005$) and avoidant coping strategies ($r = .29$, $p < .05$). The avoidant coping style was negatively associated with the avoidance ($r = –.66$, $p < .0005$), the intrusion ($r = –.39$, $p < .002$), and the hypervigilance ($r = –.48$, $p < .0005$) subscales of HTQ. This negative relation between avoidance coping and HTQ avoidance is apparently a paradox, which might be conceived as an expression of a successful separation between the two chief concepts of behavior and cognition. In this study, it meant that when avoidant coping at this stage of the process appeared to be a successful strategy, those who actively, deliberately did something to avoid thinking of, feeling, or re-experiencing the incident had low HTQ (and TSC) symptom scores. Both emotional and avoidant coping were positively associated with rational coping ($r = .63$, $p < .0005$; $r = .40$, $p < .005$, respectively), which could be seen as a sign of the chaotic phase of adaptation, where many strategies are tried at the same time.

The stressor criterion also was significantly associated with ASD ($r = .42$, $p < .002$) and with the intrusion cluster ($r = .33$, $p < .01$) but not with the other symptom clusters of ASD. The limited number of associations could be seen as a successful separation of the new, distinct criteria variables that constitute the ASD diagnosis.

To find which variables were particularly related to the ASD diagnosis, a hierarchical multiple regression analysis was carried out (cf. Table 2). The first step in the analysis, gender and marital status, accounted for 20% of the variance. The next step, being together with a fellow sufferer and lack of an optimistic attitude toward life, accounted for an increment of R^2 change = .17, $p < .002$. The last step, TSC anxiety, contributed with another increase of R^2 change = .23, $p < .0005$. Overall, the model explained 60% of the total variance of the ASD diagnosis at a high level of significance ($p < .0005$).

TABLE 2: Hierarchical Multiple Regressions to Predict Acute Stress Disorder

Model	*Variable*	β	R^2	R^2 *Change*	F	df	p
Step 1			.20		4.82	2, 48	.05
	Gender	.37					.05
	Marriage	–.33					.05
Step 2			.37	.17	5.20	4, 40	.002
	Contact to fellow sufferer	.27					.06
	Optimism	–.37					.05
Step 3			.60	.23	10.64	5, 35	.0005
	Anxiety	.58					.0005

DISCUSSION

It is important to realize that a robbery is not just one event but, as Gabor, Baril, Cusson, Elie, Leblanc, and Normendeau (1987) described it, a dynamic interplay in which several actors participate and a series of separate actions take place. The individual robbery victim generally has experienced several trauma elements, and each of them may set off psychological reactions. By mapping a number of trauma elements and analyzing them, an understanding of the most critical elements can develop, and acute intervention can be more efficient by focusing on these aspects.

The HTQ subscale values were quite similar to a study of 214 victims of violence from emergency wards (Elklit & Brink, 2002) and a group of 213 trauma clients who received crisis counseling after violent death occurred in the workplace (Elklit, 2000). In comparison with a study of acute reactions after a shooting drama at the University of Aarhus (Elklit, 1994), there was a lower total score, as the students who had been targets in the shootings, 1 week later, on average, had an IES score of approximately 36.6, which was 10.0 points higher than the robbery victims. Nonetheless, the average score in the present study is so high that it surpasses the level for "caseness" (≥ 19) according to Horowitz (1984). The study focused on the acute reactions in the first weeks after the incident. This was probably the reason that HTQ avoidance reactions occurred to a lesser degree than intrusive and vigilant reactions. This finding corresponds with the assumptions that avoidance has a secondary importance in relation to intrusion and vigilance for the development of psychological trauma and, particularly, in posttraumatic stress disorder, and it

might begin to expand to the degree where the trauma is not processed. Creamer, Burgess, and Pattison (1992) and Karlehagen et al. (1993) have made similar findings in respective studies of a shooting massacre and suicide (jumping in front of a train) in which avoidance in both studies began at a relatively low level and in the course of time grew to become more extensive.

The analysis of the separate groups of symptoms showed that in particular, dissociation has an outstanding placement, which is in accordance with the diagnosis of ASD (*DSM-IV*; Elklit, 2002a). Compared with the two above-mentioned studies of acute reactions of victims of violence and trauma clients, the TSC total scores and the dissociation scores were quite similar for the three groups. The robbery victims were similar to the victims of violence in degree of depression and sleep problems, whereas the two groups scored less than the trauma clients, who often had witnessed violent or sudden death. The robbery victims also were quite like the victims of violence with respect to somatization and aggression, where the two groups scored higher than the trauma clients. On the subscales of anxiety and interpersonal sensitivity, the robbery victims scored higher than the two other groups, which might be a reflection on the possibility of annihilation present in the trauma situation.

The number of immature defenses was about 10 points higher, though, in the above-mentioned study of trauma clients and in another study of parents who lost an infant (Elklit & Jind, 1999). This difference could be explained partly by a difference in age, as the present group of respondents is considerably younger than the other two groups. The relationships between the three defense styles can best be expressed perhaps as a defense quotient (cf. Elklit, 2002b). The total defense quotient is .93, a figure between what is seen in severely traumatized groups and people with serious psychiatric disorders, on the one side, and populations that function well, on the other side (Elklit, 2002b). Serious traumatization supposedly will weaken the psychological defense. A large comparative study (Elklit, 2002b) demonstrates that the most important parameter in differentiating various groups is the extent of immature defense strategies.

The present distress also clearly appeared in the use of coping strategies. In an analysis of shipyard workers' reactions to an explosion 6 months after the disaster (Elklit, 1997), there was quite an even distribution of the three coping styles (comparative scores, rational = 2.58, emotional = 2.68, and avoidant = 2.47). These somewhat lower figures might be due to the difference in the length of time that had passed after the event. The levels in the present study were quite high; many strategies seemingly were tested in a period characterized by emotional chaos. Surprisingly, the study also showed that avoidant coping was the common coping style, while we just saw that avoidance as a cognitive phenomenon was not yet very prominent. The mod-

est level of cognitive avoidance (based on HTQ and IES) might be an expression of repression that has not started yet, while behavioral adaptation in the form of avoidant coping is already operant.

Generally, robbery victims in this study were well supported by family and friends who listened to them. The victims were able to express themselves, and they felt better when they talked with other people. The contact with other victims in similar situations occurred regularly. Their attitudes toward their own ability, toward the future, and toward other people generally were quite positive. Gerrol and Resick (cited in Lurigio & Resick, 1990) found differences between the communicative patterns of male and female robbery victims 1 month after the robbery. We did not find a similar difference based on three questions in the Crisis Support Scale. Similar to Gerrol and Resick, we found that there were no gender differences in relation to perceived social support. In one particular area, we did find a gender difference, as women more often experienced being let down when, after the robbery, they wanted to talk to someone who they expected would support them ($F = 10.55$, $df = 1, 62$, $p < .005$).

In contrast to Cohn (1974), we found that age had an influence on degree of traumatization and type of symptoms. In accordance with Cohn, we found gender differences with respect to somatization, in which women had more symptoms than men. Cohn's findings that men experienced relatively more anger and shame was not confirmed with the present data by two separate ANOVA analyses.

A general higher occurrence of HTQ and TSC symptoms in women corresponded to what Leymann (1985) found in robbery victims and what many others have found with others types of trauma victims. Similar to Beckmann (1995), we found that women had many more intrusive symptoms than men ($F = 7.80$, $df = 1, 60$, $p < .01$). In accordance with Davis et al. (1996) and Kamphuis and Emmelkamp (l998), we found that the experience of life endangerment while under the attack was strongly associated with three core symptoms of ASD (intrusion, avoidance, and hypervigilance). Parallel to Davis et al., we found that length of education was positively associated with a lower occurrence of psychological symptoms.

Similar to Kamphuis and Emmelkamp (1998), we found that victims who had recently experienced other serious life events had more psychological symptoms. We also found a difference between the number of life events, as several events meant a higher level of traumatization and a high symptom level. The association between a moderate number of life events and hostility resembles Ruch, Chandler, and Harter (1980), who found that a modifying life change model better described the acute reactions after rape than did three other alternative models (life change, facilitator, or repression).

Prior training in how to cope in acute crisis situations did not have the effect one would wish for in respect to reducing a number of symptoms. This finding is in contrast to what Weisæth (1984) found in a study of crisis reactions after an explosive fire in a paint factory, but it is partly in accordance with the results from a Danish study of shipyard workers who were victims of an explosive fire (Elklit, 1997). The present study found, as Kamphuis and Emmelkamp (1998) and Harrison and Kinner (1998), that the use of an avoidant coping strategy was strongly associated with the three above-mentioned core symptoms of ASD.

In the interpretation of the results, one should be aware that the study deals with acute stress and that the long-term impact of the violent attacks in the respondents is not known. It is also a possibility that there are biases due to the number of respondents. The study rests on self-report but in collaboration with a psychologist who, due to extensive contact, would know if answers were not candid.

The study shows that the investigated aspects have an essential importance for understanding the complex field that is set off by a robbery or a violent attack. Future studies hopefully will provide a more precise picture of the interactions of the variables, but there already exists a knowledge that can be used for reducing acute stress produced by a robbery or a violent attack in the workplace.

APPENDIX
Items and Criteria Used to Diagnose Acute Stress Disorder

Criterion	*Item*	*Rating Scale*	*Rating Required for Diagnosis*
A. Stressor criterion	During the assault: 1. Did you think you were going to die?	Items 1 and 2, 0 = no, 1 = yes	Items 1 and 2, any 1
	2. Did you feel completely helpless?		Item 3, ≥ 6
	3. How afraid were you during the assault?	Item 3, 7-point scale (1 = *not at all*, 7 = *very much*)	
B. Dissociation			
B1. Detachment	HTQ 4, 5, 13, 17; TSC 6	0 = *never*, 1 = *once in a while/seldom*, 2 = *somewhat/often*, 3 = *most of the time/ very often*	HTQ, TSC, any 1
B2. Restricted awareness	TSC 11	same as above	Any 1

APPENDIX Continued

Criterion	*Item*	*Rating Scale*	*Rating Required for Diagnosis*
B3. Derealization	HTQ 28; TSC 19, 30	same as above	Any 1
B4. Depersonalization	HTQ 29, TSC 32	same as above	Any 1
B5. Amnesia	HTQ 12, TSC 31	same as above	Any 1
C. Re-experiencing	HTQ 1, 2, 3, 16; TSC 10	same as above	Any 2
D. Avoidance	HTQ 11, 15	same as above	Any 2
E. Arousal	HTQ 6, 7, 8, 9, 10	same as above	Any 2
F. Impairment			
F1. Social	TSC 16; HTQ 14, 26, 27, 30; CSS 3, 6	same as above CSS 7-point scale (1 = *not at all*, 7 = *very much*)	TSC, HTQ any 2 CSS 3 ≤ 2 CSS 6 ≥ 6
F2. Work	HTQ 18	same as above	Any 2
F3. Sexual	TSC 8, 23, 24	same as above	Any 2

NOTE: HTQ = Harvard Trauma Questionnaire–Part 4; TSC = Trauma Symptom Checklist; CSS = Coping Style Questionnaire.

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