The relation of perceived and received social support to mental health among first responders: A meta-analytic review

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There are plenty of theories that may support the protective role of social support in the aftermath of potentially traumatic events. This meta-analytic review examined the role of received and perceived social support in promoting mental health among first responders (e.g., firefighters, police officers, and paramedics or emergency medical services personnel). Results showed that the effect sizes derived from 37 empirical studies ranged from 0 to 0.46. The overall weighted mean effect size was of medium magnitude ($r = 0.27$). Moreover, moderator analysis showed that the effect size of perceived social support ($r = 0.31$) was significantly higher than the effect size of received social support ($r = 0.22$). Participants’ age and gender or research design did not exert an influence on the relationship between social support and mental health. Theoretical implications and limitations are discussed. © 2010 Wiley Periodicals, Inc.

First responders are those individuals who, in the early stages of an accident or disaster, are responsible for the protection and preservation of life, property, and the environment. Traditionally, the definition of first responders encompasses police, firefighters, search and rescue personnel, and emergency and paramedical teams. They serve an important role in protecting the community in the aftermath of disaster and in preserving continuity of critical community functions. However, first responders experience a broad range of health and mental health consequences as a result of work-related exposures (Benedek, Fullerton, & Ursano, 2007).

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Research on first responders focused on delineating stressors (e.g., witnessing the death of a citizen) and stress mediators such as social support (Cowman, Ferrari, & Liao-Troth, 2004). This literature showed mixed evidence concerning the association of social support to mental health among first responders exposed to critical incidents. Although the majority of studies yielded significant results (e.g., Beaton, Murphy, Pike, & Corneil, 1997; Brown & Grover, 1998; Corneil, Beaton, Murphy, Johnson & Pike, 1999; Linley & Joseph, 2006; Regehr, Hill, & Glancy, 2000; Stephens & Long, 1999; van der Ploeg & Kleber, 2003), there are studies showing nonsignificant results (Lowery & Stokes, 2005; Hyman, 2004; Murphy, Johnson, & Beaton, 2004; Roy, & Steptoe, 1994). Given this controversy, it would be useful to synthesize the available data to provide an overall average effect of the relationship between social support and mental health among first responders. Meta-analytic studies are systematic quantitative review of original research that describe the average strength of the effect or phenomenon, its variability, its statistical significance, and the nature of the moderator variables from which one can predict the relative strength of the effect or phenomenon (Lipsey & Wilson, 2001).

In the last 10 years, two meta-analyses have been published on the relationship between social support and stress at work. Viswesvaran, Sanchez, and Fisher’s (1999) meta-analysis of 68 studies on the role of social support in the process of work stress showed that social support had a threefold effect on work stressor–strain relations. More specifically, social support reduced the distress experienced ($r = -.21$), mitigated perceived stressors ($r = -.12$), and moderated the stressor–strain relationship (cumulated $R^2 = .03$). It was found that social support reduced the level of stressors or distress experienced rather than social support being elicited when stressors were encountered or distress was experienced. There was weak evidence for mediational and suppressor effects of social support on the process of work stress. The second meta-analysis (Halbesleben, 2006) concerning the relationship between social support and burnout showed medium effect size; more specifically, social support was negatively related to exhaustion ($r = -.25$) and depersonalization ($r = -.22$) and positively related to personal accomplishment ($r = .23$). However, both these meta-analyses were not exclusively targeted at first responders and did not specifically consider involvement in critical incidents.

Two meta-analyses investigated the association of social support to posttraumatic stress disorder. Across 11 studies, Brewin, Andrews, and Valentine (2000) found that social support was negatively related to posttraumatic stress disorder, with an effect size in the large range ($r = -.40$). In a similar way, in Ozer, Best, Lipsey, and Weiss’ (2003) meta-analysis the effect size of the relationship between perceived social support after the trauma and posttraumatic stress disorder symptoms was in the medium range ($r = -.28$), making social support the second strongest predictor after peritraumatic dissociation. Although these meta-analyses explored the relationship between social support and posttraumatic stress disorder, they were not specific to first responders because they included different populations (e.g., combat veterans, crime victims, motor vehicle accident victims).

There is plenty of theory that may support the protective role of social support in the aftermath of critical incidents among first responders. In his Conservation of Resources (COR) model, Hobfoll (1988) argued that social support can both broaden one’s pool of available resources and replace or reinforce other resources that have been lacking. Horowitz’ (1976) model of posttraumatic stress disorder posits that social support may promote the assimilation of the traumatic information. Moreover,
according to Joseph, Williams, and Yule’s (1995) model, social support may influence the appraisal of the event and may promote adaptive coping strategies. Finally, Moos and Schaefer (1993) suggested that social support may promote adaptation directly and indirectly through its effect on appraisal and coping strategies.

However, there are some theoretical arguments that suggest a negative effect of social support in the aftermath of potentially traumatic events. Hobfoll and London (1986) found that talking about the trauma made participants more distressed (“pressure cooker” effect). According to this perspective, under highly stressful circumstances, social support may exacerbate distress rather than mitigate it, because talking about trauma may be an additional over–exposure. This hypothesis corresponds to the “reverse buffering” effect that occurs when the presence of social support does not protect from stress but actually exacerbates the trauma experience. Consistent with this perspective, Stephens, Long, and Miller (1997) found a positive relationship between communication about negative aspects of work with both peers and supervisors and traumatic stress symptoms.

Yet, much of the theoretical argument seems to suggest that social support is adaptive rather than disadaptive. Moreover, qualitative studies among first responders offer support for the protective role of social support (e.g., Dyregrov & Mitchell, 1992; Haslam & Mallon, 2003). For example Fullerton, McCarroll, Ursano, and Wright (1992) found that social support, especially among peers, may be relevant after critical incidents:

The only one who can really understand your attitudes and feelings is the guy next to you. We provide psychological first aid and reassurance to each other. All a buddy needs is the reassurance of someone else nearby. The people in our unit always talk afterwards, trying to learn from our mistakes. We try to make it easier on each other. We’re like a family! We do everything as a team. One person takes the lead. Everybody looks at the guy next to him. You think to yourself, “If he can take it, I can take it.” You may find out months or years later that something really had bothered somebody and he never talked about it. Or later on you may argue about what had gone wrong. Communication with each other is very important. (p. 374)

In our meta-analysis, we hypothesized that social support will be significantly related to mental health among first responders. Given that previous meta-analysis found medium effect sizes we expect to find the same magnitude.

Finally, we examined four moderators of the relation of social support to mental health. In fact, the studies taken into account in a meta-analysis are highly dissimilar as to research methods (longitudinal vs. cross-sectional), social support dimensions (perceived vs. received), and participants (age and gender), all of which are potential moderators.

It is important to know whether longitudinal versus cross-sectional studies might produce different relations between social support and mental health. If these factors are correlates rather than determinants, then we would expect that relations of social support to mental health would be stronger in cross-sectional studies rather in longitudinal ones. Because we hypothesized that social support is a predictor of mental health, we expect there to be no differences between cross-sectional and longitudinal studies.
Moreover, we would expect that according to the social support deterioration deterrence model (Norris & Kaniasty, 1996), the effect of received social support is mediated by perceived social support. Given that perceived social support is a proximal mediator in comparison to received social support, it would be expected that the magnitude of the effect size of perceived social support is greater than received social support. In fact, when a causal process is temporally proximal, it is likely that the size of the effect gets larger in magnitude, whereas as the causal process becomes more distal, the effect gets smaller (Shrout & Bolger, 2002).

In testing the hypotheses noted above, we controlled for first responders’ gender and age.

METHOD

Selection Criteria

To be included in this review, studies had to meet the following inclusion criteria: (a) they should focus on the relation between social support and mental health among first responders; (b) they provided an estimate of the relationship of social support and mental health; (c) they should be published in English in a peer-reviewed journal in a refereed journal; and (d) they should not include the influence of professional social support (e.g., debriefing). In case of different studies reporting analyses from the same sample, we chose one study reporting estimates from longitudinal data considering the longest period or from the largest sample.

Given that police officers have multiple roles and not only rescue workers, we considered studies in which samples of law enforcement personnel were involved in rescue operations or exposed to critical incidents (e.g., road accidents, disasters). In this review we considered front line service emergency services staff such as paramedics, firefighters or police officers; second line services, such as, for example, social workers or mental health professionals, were not considered given the different role and education.

Search Strategy

Original articles for this review were obtained using a four-step procedure. First, we identified the relevant peer-reviewed literature by searching several electronic databases: Medline (1966 to 2008, Week 40), EMBASE (1980 to 2008, Week 40), PsychINFO (1972 to 2008, Week 40), and ISI Web of Science (1980 to 2008, Week 40). The search was performed by using the following search term combinations: “social support” and “first responders,” “rescue workers,” “disaster workers,” “relief workers,” “emergency service personnel,” “firefighters,” “ambulance personnel,” “ambulance worker,” “Red Cross,” “ambulance-men,” “paramedics,” “emergency medical technicians,” “emergency responders,” or “ems personnel.” Moreover, we performed a separate search by cross-referencing the words “police” or “law enforcement” and “social support” with “critical incidents,” “critical incident exposure,” “disasters,” “rescuing,” “rescues,” “rescuers,” “rescuer,” “rescue,” “stress,” “trauma,” or “stress disorders, posttraumatic”.

Second, we reviewed all the identified abstracts and excluded studies that did not satisfy selection criteria. Third, the full-text versions of all potentially relevant studies
were reviewed and assessed for inclusion. Finally, we looked for references in previous review papers (Benedek, et al., 2007; Gist, 2007; Lerias & Byrne, 2003; Mitchell & Dyregrov, 1993; Neria, Nandi, & Galea, 2008; Sterud, Ekeberg, & Hem, 2006; Ursano, McCarroll & Fullerton, 2003).

**Variables Coded From Each Study**

We identified 67 studies and 37 of them met the criteria for inclusion. These selected studies are marked in the reference list with asterisks. Table 1 contains the list of the studies and their characteristics. A table containing the list of the studies, their characteristics, and the derived effect sizes is available for consultation at http://emergenze.psice.unibo.it/meta_analysis_first_responders.pdf.

For each included study, we extracted the following data: authors, year of publication, country, study design, sample characteristics, social support measure, and outcome variables.

Researchers have operationalized occupational mental health in a number of ways. Some studies have focused on negative measures of psychological adjustment (burnout, posttraumatic stress disorder, depression, anxiety, guilt, negative mood, etc.), while others have looked at mental health as a matter of well-being or job satisfaction. Job satisfaction was considered as a criterion measure, because it is often thought to develop in response to the characteristics of the employees’ jobs or by the characteristics of the organizations in which they work. Thus, it may be considered an indicator of occupational mental health (Parks & Steelman, 2008). Scores on measures of negative measures were reverse-coded, such that high scores represent low mental health problems.

**Computation and Analysis of Effect Sizes**

The procedure we employed in this meta-analysis can be summarized as follows:

1. Calculation of primary effect sizes was obtained using either Excel macro or formulae provided by Lipsey and Wilson (2001). Pearson’s $r$ was the effect size metric used in this meta-analysis and, therefore, all the statistics were converted to the correlation coefficient $r$. For those cases in which two or more studies used the same sample, we retained only the study with the longitudinal data or the largest sample size. When studies employed more than one measure of social support or mental health, we calculated an average of the effect sizes using DeCoster’s (2004) guidelines to ensure sample independence. For multiple regression analyses we contacted the authors to obtain original correlation coefficients. In case of nonresponse, beta coefficients were converted into Pearson’s $r$ using the formula provided by Peterson and Brown (2005). One study (Hyman, 2004) reported nonsignificant results but did not provide a specific test statistic, so we set its effect size equal to zero.


3. Analysis of outliers. We examined studies yielding extreme values (more than two standard deviations from all the effect sizes). Studies yielding extreme values were examined after the fact to establish if they differ methodologically from the other studies. In case of no difference, we employed the Windsorizing procedure; in other words, we recoded the extreme value to the value at two standard deviations from the mean.
standard deviations from the mean as recommended by Lipsey and Wilson (2001).

4 Calculation of basic central tendency statistics: (a) homogeneity analysis of primary effect sizes using chi-square of heterogeneity test (df = k - 1) and \( \hat{I}^2 \) statistic. These tests specify the amounts of heterogeneity (Higgins & Thompson, 2002). A statistically significant Q statistic indicates a heterogeneous distribution of effect sizes and suggests that certain study characteristics may be related with systematic differences among effect sizes. Percentages of around 25% (\( I^2 = 25 \)), 50% (\( I^2 = 50 \)), and 75% (\( I^2 = 75 \)) mean low, medium, and high heterogeneity, respectively; (b) mean effect size and confidence interval (CI) using conditional random effects approach (Hedges & Vevea, 1998). A Monte Carlo simulation showed that this approach is more effective with unreliability of between-study variance estimates in case the number and the size of the studies are small (Van den Noortgate & Onghena, 2003). In this procedure, the use of the fixed or random effects approach is conditional on homogeneity analysis. In case of no significant difference between effects size, we calculated a fixed-effects analysis. If homogeneity was rejected, then we used random effects analysis procedures. We decide to employ Hedges and Vevea’s (1998) method because, according to Field (2003b), this procedure controls the Type I error rate better than the Hunter and Schmidt method (2000) when the number of studies is not large (\( k = 20–40 \)). Effect sizes were converted into a standard normal metric (using Fisher’s r-to-Z transformation), and then we calculated a weighted average of these transformed scores using (a) in case of fixed effect, the inverse variances of each study, and (b) in case of random effect, a variance component that incorporated between-study variance in addition to the within-study variance used in the fixed-effect model (Field, 2001). After being weighted and aggregated, Fisher’s r-to-Z converted scores were transformed back to r. We used Cohen’s guidelines (as cited in Lipsey & Wilson, 2001) for interpreting the magnitude of the effect size correlations: a small effect size is \( r \leq 0.10 \); a medium effect size is \( r = .25 \); and a large effect size is \( r \geq .40 \).

5 Analysis of file-drawer problem: We used Orwin’s (1983) fail-safe N for Cohen’s small effect size (0.1) as suggested by Lipsey and Wilson (2001).

6 Moderator analyses. In case of significantly heterogeneous effect size distributions, we examined the significant effect of moderators through single

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Table 1. Stem and Leaf Displays of Effect Sizes for Predictor Variables

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Note. Stem width: .10; each leaf: 1 case.
factor analysis of variance (ANOVA) and multivariate linear regression analyses assuming mixed effects models (random effects) according to Overton (1998). This analysis was performed to investigate the moderator variables that may account for excess variability among effect sizes. In case of categorical moderator, the interpretation is analogous to ANOVA where \(Q_{\text{BETWEEN}}\) reflects the portion explained by the categorical variable and \(Q_{\text{WITHIN}}\) indicates the residual pooled within-groups portion. Then, the between and within-group Qs from the ANOVA were computed and examined to determine how much heterogeneity existed in the data after accounting for the moderator. We estimated the model using full-information maximum likelihood method, as implemented in macros developed for this purpose by Lipsey and Wilson (2001).

RESULTS

Analysis of the distribution of effect sizes revealed two potential outliers (see Table 1). One of the effect outliers was reported by Murphy et al. (2004), whereas the other outlier was reported by Hyman (2004). Because the effect sizes of all of these studies yielded extreme values (more than 2 standard deviations from all the effect sizes) and did not differ methodologically from the other studies, we employed the Windsorizing procedure (Lipsey & Wilson, 2001). After these adjustments for outliers were made, the distribution of correlations approached normality as depicted by the Q–Q plot (http://emergenze.psice.unibo.it/meta_analysis_first_responders.pdf).

Results from basic central tendency statistics and publication bias analysis are presented in Table 2. The variance in the effect size was heterogeneously distributed and could not be accounted for by sampling error alone, as evidenced by a significant Q-value. In addition, according to \(I^2\) statistic, most of the variables showed moderate heterogeneity. Therefore, the effect size was calculated by the random effects model. The analysis of primary effect size was indicative of a moderate relationship between social support and mental health among first responders represented by a Pearson correlation of .27 (95% CI, 0.30–0.24). Effect size did not change as result of adjustment of outliers. The adjustment of outliers reduced heterogeneity. The high number of fail-safe N indicated that this finding seems to be robust to the file-drawer problem.

| Table 2. Basic Central Tendency Statistics and File-Drawer Problem Analysis |
|---------------|---------------|--------|--------|--------|--------|
|               | \(k\) | \(N\) | Effect Size | 95% CI | \(Q\) | \(I^2\) | Fail-Safe N |
| Mean effect size prior to adjustment of outliers | 36 | 15803 | .27* | .30 to .24 | 99.10 | 66% | 59 |
| Mean effect size after adjustment of outliers | 36 | 15803 | .27* | .30 to .24 | 93.97 | 64% | 59 |

Note. CI = confidence interval; \(k\) refers to the number of studies available for computation of a specific effect size; \(N\) provides the sample size on which the effect size was based; for effect sizes, \(r\) is significantly different from zero at \(p < .001\); for the \(Q\) statistic, significant values indicate that there is more variability in effect sizes than one would expect by chance; for the \(I^2\) statistic, percentages of around 25% (\(I^2 = 25\)), 50% (\(I^2 = 50\)), and 75% (\(I^2 = 75\)) mean low, medium, and high heterogeneity, respectively. Scores on measures of mental health problems were reverse-coded, such that high scores represent low mental health problems. Thus, positive effect sizes in this column indicate that more social support is associated with more well-being and less mental health problems.
Table 3 provides results from moderator analysis (weighted regression) of the relation of social support to mental health. Moderator analysis of the variables age, gender (percentage of men), research design (cross-sectional vs. longitudinal), and type of support (received support vs. perceived support; $R^2 = .01; Q_{\text{MODEL}} = 25.97, df = 4, p < .001$) did explain a significant amount of variability and showed one significant moderator. The effect size of social support was predicted by the type of support. Analog to the ANOVA moderator analysis ($Q_{\text{BETWEEN}} = 8.14, df = 1, p > .01; Q_{\text{WITHIN}} = 28.72, df = 28, p = .43$) showed that the effect size for perceived social support was .31 ($p < .001$), while the effect size for received social support was .22 ($p < .001$). The within-group $Q$ value was not significant and indicates that after accounting for type of social support, the distribution of effect sizes for this dimension was homogeneous.

**DISCUSSION**

The current meta-analysis examined a sample of studies investigating the relation between social support and mental health among first responders. Although there was some controversy in the literature, this meta-analysis showed that social support is significantly related to mental health among first responders. The overall weighted mean effect size is of medium magnitude ($r = .27$) as defined by Cohen (1988). The strength of the effect size is similar to that of Ozer et al.’s (2003) meta-analysis on the relationship between social support and posttraumatic stress disorder symptoms.

As hypothesized, there were no significant differences between the estimates of longitudinal and cross-sectional studies. Therefore, relationship of social support to mental health was not significantly stronger in cross-sectional studies than in longitudinal studies. This result does not offer support to the idea that social support resources are merely correlates of mental health.

This meta-analysis found no evidence to support the reverse buffering hypothesis in first responders. All the effect sizes ranged from zero to .46. In other words, we did not find any averaged positive relationship between social support and well-being or less mental health problems.

The present study showed that all the types of support are not equally related to mental health. According to the social support deterioration deterrence model (Norris & Kaniasty, 1996; Kaniasty & Norris, 2004), the present study showed that the effect size of received social support is more distal in comparison to the effect size of
perceived social support. More specifically, the magnitude of the effect size of perceived social support was medium to large ($r = .31, p < .001$), while for received social support, it was medium to small ($r = .22, p < .001$). Given that the effect size of perceived social support is proximal and the effect size of received social support is distal, this result may offer support for the mediation pathway hypothesized in the social support deterioration deterrence model.

Generally speaking, this study supports the notion that social support is a resilience factor in the aftermath of potentially traumatic events. However, the mechanisms by which social support is related to adaptation are still not clear. Horowitz’ (1976) model of posttraumatic stress disorder hypothesized the beneficial effect of the process of working through, which includes talking about the trauma and its related emotions so that the experience can be assimilated. Other theoretical perspectives assume that social support may intervene between the stressor and well-being by attenuating or preventing a stress appraisal response (Cohen & Wills, 1985). In other words, the perception that others can and will provide necessary help may redefine the potential for harm or danger posed by a situation and/or reinforce one’s self efficacy.

Social support may influence first responders’ interpretation of the event and his/her attribution patterns. For example, following a rescue operation, a colleague or a supervisor may confirm that everything possible was done to help and support the patient. As Jonsson and Segesten (2003, p. 218) revealed, “Questions like ‘could I have done anything different’ and ‘had it been possible to do more’ are always there”; in their qualitative study among ambulance workers, the authors found that feelings of guilt, shame, and self-loathing accompanied traumatic events such as confrontations with injured, dying, or dead people. Supportive others may influence first responders’ emotional states and may provide help in identifying adaptive coping strategies. Two prospective studies among disaster victims have shown that crisis support predicts lower subsequent avoidance behaviours (Dalgleish et al. 1996; Joseph, Yule, Williams, & Andrews, 1993). It is likely that the effect of social support may be mediated by avoidance coping (Charuvastra & Cloitre, 2008).

Social support may be of importance in the cognitive processing of traumatic events. In his model, Lepore (2001) proposes that the nature and quality of social interactions provide opportunities to gather information useful for the assimilation of trauma (e.g., through advice, new perspectives or alternative interpretations) and influence the frequency of intrusive thoughts, the tendency to avoid disclosing of feelings, or thinking about the event. Similarly, the organismic valuing theory of growth through adversity posits that a supportive social environmental context that meets the basic needs of autonomy, competence, and relatedness are crucial for the positive accommodation of the traumatic memory (Joseph & Linley, 2006). A recent review of the relationship between social support and traumatic stress showed that social support may influence fear processing, acquisition, and extinction. Positive social experiences can attenuate fear responses, whereas socially negative or even neutral social experiences can heighten and maintain fear responses (Charuvastra & Cloitre, 2008). Posttraumatic stress disorder, as well as other fear circuitry disorders, is characterized by negative or threat aspects of content-specific concerns in evaluations, interpretation, attention, and memory (Huppert, Foa, McNally, Cahill, 2009). Fear responses have been clarified by advances in the field of classical conditioning and in our understanding of basic mechanisms of memory and learning. The acquisition and expression of fear conditioning may be affected by abnormalities in amygdala pathways (Garakan, Mathew, & Charney, 2006).
Apart from theories of posttraumatic stress disorder, the conservation of resource theory posits that when adequate help is received, it can block the spiral of resource loss that renders victims even more vulnerable to the impact of the stressor (Hobfoll, 1988). According to this resource ecology perspective, a critical incident may result in distress because of how people cope or attempt to cope with the loss or threatened loss of key resources (e.g., self-esteem, physical health, collective efficacy). Social support may be considered an asset because it promotes the preservation of the valued resources. However, these resources may be potentially eroded by the impact of stress. The results of this study suggest the need to preserve and reinforce social support resources in the aftermath of critical incidents involvement.

Although this meta-analytic review has many strengths in the representation of the weighted “average” effect across different studies, there are many limitations inherent to this technique (Lipsey & Wilson, 2001). The most significant limitation of this meta-analysis is the methodological adequacy of the research base. Empirical studies with prospective research design lack because of ethical and feasibility reasons. Even if the effect sizes do not differ between cross-sectional and longitudinal studies, we cannot draw any serious conclusion concerning the hypothesis of causality.

The literature on the relationship between social support and mental health offered support for two competing theories. The first, called social causation theory, posits that social support determines well-being; while the second, called social selection theory, conceives that well-being determines social support. (See Dohrenwend, 2000, Johnson, Cohen, Dohrenwend, Link, and Brook, 1999.) A recent longitudinal study among a sample of 557 victims of a natural disaster in Mexico offered support for both theories. This study showed that social causation accounted for the support-to-distress relationship in the earlier postdisaster phase, whereas only social selection accounted for the linkage between social support and distress relationship at 18 to 24 months after the event (Kaniasty & Norris, 2008). However, first responders differ from direct victims of disasters and, thus, prospective studies are needed to clearly demonstrate the direction of this relation as well as to determine the timing of social support regarding this specific population.

Another limitation concerns the different ways in which social support may be conceptualized and operationalized. Although, in this study, we differentiated between received and perceived social support, future studies should evaluate the influence of the various functions of social support (e.g., belonging, self-esteem, tangible) and the different sources of social support (e.g., peer, supervisor, family). Moreover, it is possible that all the types of social support may not be considered protective. For example, ill-timed and overly intrusive support might exacerbate stress reactions. Finally, although the high number of fail-safe N indicated that this finding seems to be robust to the file-drawer problem, it should be noted that Cohen’s approach has a number of disadvantages (e.g., is explicitly unweighted, is not based on significance testing; Rosenberg, 2005).

Despite the limitations, this meta-analysis showed that social support is related to mental health among first responders. The results of this study and theoretical considerations suggest that interventions aimed at increasing social support among first responders may also promote their well-being. For example, 1 year after the 9/11 terrorist attack, the Police Organization Providing Peer Assistance was added to the list of Project Liberty providers, a large-scale public health intervention, which offered short-term crisis counseling, psychoeducational interventions, and triage referral to residents of the greater New York City metropolitan area after 9/11, to perform...
outreach, support work, and screening for stress symptoms related to the disaster in the police (Dowling, Moynihan, Genet, & Lewis, 2006). Moreover, studies carried out by Project Liberty showed that rescue workers experienced difficulty in maintaining relationships with family (Jackson et al., 2006), and those people with greater attack-related exposure such as rescue or recovery workers were also more likely to be referred to more intensive mental health care (Covell, Essock, Felton, & Donahue, 2006). Beside the provision of brief cognitive-behavioural therapy that has been found effective in alleviating acute distress and preventing chronic distress (Foa et al., 2005), mental health interventions could be targeted to help rescue personnel improve their networks of social and occupational support.

REFERENCES


References marked with an asterisk indicate studies included in the meta-analysis.


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