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Frequency and Severity Approaches to Indexing Exposure to Trauma: The Critical Incident History Questionnaire for Police Officers

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Abstract

The Critical Incident History Questionnaire indexes cumulative exposure to traumatic incidents in police by examining incident frequency and rated severity. In over 700 officers, event severity was negatively correlated ($r_s = -.61$) with frequency of exposure. Cumulative exposure indices that varied emphasis on frequency and severity—using both nomothetic and idiographic methods—all showed satisfactory psychometric properties and similar correlates. All indices were only modestly related to posttraumatic stress disorder (PTSD) symptoms. Ratings of incident severity were not influenced by whether officers had ever experienced the incident. Because no index summarizing cumulative exposure to trauma had superior validity, our findings suggest that precision is not increased if frequency is weighted by severity.

In the past decade questions concerning the impact of critical incidents on emergency services personnel in general, and police officers in particular, have moved beyond qualitative accounts (e.g., Violanti & Paton, 1999) to quantitative inquiry (e.g., McCaslin, Metzler, et al., 2006). For example, studies have investigated the common sense notion that the dangerous aspects of being a first responder (e.g., exposure to life threat) increase the likelihood that these individuals will experience trauma-related symptoms (Marmar et al.,

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1999; McCaslin, Rogers, et al., 2006). Research has shown elevations of symptoms of posttraumatic stress disorder (PTSD) in these groups (e.g., Carlier, Lamberts, & Gersons, 1997; Gersons, 1989; Maia et al., 2007; McFarlane & Papay, 1992).

Research has also examined what factors are linked to symptomatic distress, both general and posttraumatic. In a prospective study of 223 officers, Hodgins, Creamer, and Bell (2001) reported that stable preexisting characteristics such as personality traits, gender, and trait dissociation predicted nonspecific symptomatic distress, but that severity of exposure was a stronger predictor of posttraumatic stress symptoms. Partially replicating the Hodgins report is a study of New Zealand police recruits and officers that found that higher cumulative frequency of critical incidents was a risk factor for PTSD (Buchanan, Stephens, & Long, 2001). In pointing to the role of exposure to critical incidents on the job as a predictor of posttraumatic distress, these studies highlight two methods by which exposure can be indexed: (a) mere frequency, and (b) a modification of raw frequency that takes into account that incidents differ in their impact of severity.

Carlier and colleagues (1997) presented an initial effort to scale traumatic stressors in police, but this work was not further developed to contrast types of incidents. Critical incidents experienced by emergency service personnel have not been systematically scaled as comprehensively as they have been for combat exposure (e.g., King, King, Vogt, Knight, & Samper, 2006). As a result, a clear understanding of the consequences of using only frequency information, only severity information, or a combination of the two, is lacking. It is not known what differences would emerge if the two following approaches were compared: (a) quantifying cumulative exposure using only information about the frequency of exposure to critical incidents, an approach that implies all incidents have equal potential to produce symptoms; and (b) quantifying cumulative exposure by weighting incidents by the degree of their severity or potential to cause symptoms. We were unable to locate any study in which the impact of including information about the severity of the critical incident was examined systematically in police samples or in other trauma subgroups.

Frequency of exposure plays a role in predicting the development of PTSD symptoms (e.g., Vasterling et al., 2010). Severity of exposure also is important (Dickstein et al., 2010). It appears that severity has only been quantified in a nomothetic manner—judging severity independent of whether one had experienced the event being judged. We were unable to locate any study in which differences in the judgment of event severity or risk potential was based only on input from those who had experienced the event—an alternative that we term an idiographic approach. Comparing these approaches addresses whether the severity rating of an event is a consensually held judgment or a more idiosyncratic and potentially biased one.

In this article we have two related goals: (a) to describe the development of a quantitative approach to indexing cumulative exposure to critical incidents in police officers, and (b) to better understand the impact of frequency and severity on the measurement of cumulative exposure. We explored the impact of exposure frequency and severity for the set of incidents, examined idiographic and nomothetic scaling of severity, and present reliability and validity data describing the variety of summary indices.

Based on the findings that severity of events predicts symptomatic response (e.g., Dickstein et al., 2010), we hypothesized that less frequent events would be appraised by officers as more severe or more likely to cause distress. We did not have a strong rationale to favor either the nomothetic or the idiographic approach to measuring severity, but we did expect that a severity weighting would be an important component of any final index. We hypothesized that the relationship of cumulative critical incident exposure would be more

strongly related to general psychiatric and PTSD symptoms than it would be to stress from organizational and routine nontraumatic work stressors because of the special status of trauma exposure. Finally, to bolster the construct validity of the measure of cumulative exposure, we needed to demonstrate that it would be (a) modestly to moderately correlated with years of service on the force, and (b) years of service would be unrelated to symptom measures. Taken together these results would show that it is greater exposure, not just longer duration of service and longer opportunity to be exposed, that leads to PTSD symptoms.

METHOD

Participants

After the study was approved by the relevant institutional review boards, police officers were recruited from the urban departments of New York, New York, and Oakland and San Jose, California. Potential participants were identified by each department's personnel section from personnel rosters in a series of waves that varied across departments depending on the number of responses in each prior wave. Sampling was not explicitly population-based.

Each potential participant received a confidential invitation letter at home, which described the study, along with letters of support from their department's chief and union head. They were invited to take part in a study "to learn about the experiences, work-related difficulties, and stress experienced by police officers and detectives." Participants giving informed consent completed a self-report questionnaire booklet including demographic, symptom, and other measures described below. Reimbursement of $100 was provided to those who returned their completed questionnaire.

Twelve-hundred officers agreed to receive booklets and 747 completed and returned the booklets. The number of invitations sent was not tracked by the departments. Because those who agreed to consider participating, but ultimately did not formally enroll never provided informed consent, retaining information about them was not appropriate. Consequently, analysis of differences between responders and nonresponders was not possible.

Not all officers completed every part of the questionnaire packet. The pattern of missing data was unsystematic across all the measures included in the booklet (see below). Detailed analyses with reasonable power were conducted on the characteristics of those with and without missing data on the set of measures reported here. The results of those analyses failed to reveal significant differences in any of the comparisons. To utilize as much of the data as possible, the sample size was allowed to vary across analyses. The primary sample comprised 719 officers (79% male), with a mean age of 37.0 (*SD* = 6.8) years. In terms of education, 28% were high school graduates, 32% completed 2 years, and 32% completed 4 years of college. The ethnoracial composition was 45% White, 23% Black, 25% Hispanic, and 7% Other. To examine stability over time, we used a sample of 54 officers who had participated in a substudy of physiologic reactivity within 6 months of the initial survey (Pole, Neylan, Best, Orr, & Marmar, 2003).

Measures

In addition to the set of duty-related critical incidents, the survey included measures of peritraumatic reactions, general psychiatric and PTSD symptoms, alcohol use, social support, work stress, and a standard measure of trauma exposure. In conjunction with the measure of peritraumatic dissociation and a number of other trauma-related measures in the survey, officers were asked to select the one duty-related critical incident from among all of those that they had experienced at any time over the course of police service that had been,

up to the present, “the most troublesome, disturbing, or distressing.” This index event was used for measures requiring referencing of a specific critical incident.

Critical Incident History Questionnaire—From both literature and consultation with police psychologists and police personnel, we generated a preliminary set of more than 40 critical incidents that could occur in the course of police service. These incidents varied from encountering the body of someone recently dead, to being seriously injured intentionally, to making a mistake that led to the serious injury or death of a fellow officer. This initial item pool was reduced to a final 34 items following review by our police consultants.

The police consultants also suggested various response formats aimed at accomplishing a number of competing goals simultaneously: (a) credibility to the responding officers, (b) precise frequency measurement of relatively rare incidents that could be easily recalled and accurately tallied by responding officers (e.g., being taken hostage), and (c) progressively less precise frequency measurements for repetitively experienced incidents that would be difficult to accurately count retrospectively, particularly by officers with many years of service (e.g., encountering the body of someone recently dead or making a death notification). Our solution was to instruct the participating officer to indicate the exact number of times that the incident was experienced if the frequency was between 0 and 9. For greater frequencies, we provided three additional response options: 10–20, 21–50, and 51+.

We included an additional rating task for each item designed to scale the severity of exposure. Using a scale of 0 = *not at all* to 4 = *extremely*, we asked each officer to rate each item in response to the following question: “In your opinion, how difficult would it be for police officers to cope with this type of incident?” In this way, we sought to collect data to give a nomothetic view of the severity of each incident, rather than how each officer might have personally responded or imagined he or she might respond to an incident he or she had never experienced. If these ratings were not sufficiently reliable, the conclusion would be that consensus on objective severity and consequent coping effort was not possible. The subsample of 54 officers who were reretested did not complete a second assessment of ratings of severity.

To assess content validity, we had a group of 52 police psychologists individually and anonymously judge the relevance and representativeness of each critical incident item when experienced in the line of duty. The rating scale was anchored as follows: 1 = *not at all relevant or representative*; 3 = *neutral*; 5 = *very relevant or representative*.

Additional measures—Besides demographic information, additional measures covered reactions at the time of the most distressing event, PTSD specific and general symptoms, a measure of routine police stress, another measure of trauma exposure, social support, and alcohol use.

The 10-item Peritraumatic Dissociative Experiences Questionnaire (Marmar, Metzler, & Otte, 2004), yields a single total score and was utilized to assess immediate dissociative responses to the worst critical incident. The items tap altered time perception, depersonalization, derealization, and altered body image. Coefficient alpha was .83 in these data.

The Impact of Event Scale-Revised (Weiss, 2004) is a 22-item self-report measure, with extensive reliability and validity data (Elhai, Gray, Kashdan, & Franklin, 2005), designed to quantify the severity of trauma-related symptoms of intrusion, avoidance, and hyperarousal

experienced within the last 7 days with respect to the worst critical incident. Alpha coefficients were .90, .86, and .82, respectively, in these data.

The Revised Civilian Mississippi Scale for PTSD (Vreven, Gudanowski, King, & King, 1995) also referenced the worst critical incident. The scale yields a single total score comprising PTSD-related symptoms of intrusion, avoidance, hyperarousal, and other difficulties experienced since the time of the critical incident. It, too, has extensive reliability and validity data in the literature (Norris & Perilla, 1996); coefficient alpha was .86 in these data.

Overall general psychiatric symptoms, as well as depression and anxiety, were assessed using the Symptom Checklist 90-Revised (Derogatis, 1994). It comprises 90 symptoms or complaints experienced within the past 7 days that are rated on a 5-point scale ranging from 0 (*not at all*) to 4 (*extremely*). The Global Severity Index reflects the average endorsement level across all symptoms. Coefficient alpha was .90 for depression, .84 for anxiety, and .97 for global severity.

The Work Environment Inventory (Liberman et al., 2002) consists of 68 items, 53 of which are framed in generic language, including 10 items related to workplace discrimination. The remaining 15 items use police-specific language. Each item is posed as a statement (e.g., “I am under a lot of pressure to produce results”), and participants respond on a disagree-to-agree response format ranging from −2 to +2. The items are directionally balanced so that agreement implies higher stress on 39 items, and disagreement implies higher stress on the remaining 29 items. A total routine work stress score was used and yielded a coefficient alpha of .92.

The Trauma History Questionnaire (Green, 1996) yields a frequency measure of general trauma exposure for which reliability and validity data are satisfactory (Norris & Hamblen, 2004). Because it comprises events that are possible in the course of duty and those that are not, we derived a second score based on items that could apply only to civilian events. Coefficient alpha was .77 for these data for the total score and .58 for the shortened civilian version.

Social support was assessed using a 10-item version of the measure of social support used in the National Vietnam Veterans Readjustment Study (Kulka et al., 1990). Items such as “There is someone with whom you can share private worries or fears” and “There is someone you can talk to about family or personal problems” were rated on a scale from 1 to 5. Coefficient alpha was .94 for these data.

Problems with alcohol were assessed by the Michigan Alcohol Screening Test (Selzer, 1971). This measure is very widely used with reliability and validity information available in meta-analytic form (Teitelbaum & Mullen, 2000). Coefficient alpha was .76 for these data.

Approaches to a Total Cumulative Exposure Index

We constructed 11 different indices to examine differential effects of scaling frequency, the effect of indexing severity idiographically (rating only items the officer had actually been exposed to) or nomothetically (rating all items regardless of exposure), the effect of using severity alone as a total score index, and finally the effect of weighting by severity. We present findings for only 6 of the 11 indices because the findings for the other 5 were very similar in all respects. All indices were produced by summing across all 34 items. The first three indexes were based on some function of frequency of endorsement. The next two were purely a result of severity: one idiographic, the other nomothetic. The final one involved

weighting frequency by severity. Given that the response format we used to collect the data was designed to accommodate rare and very frequent critical incidents, our approaches to frequency recoded the values that served as the last three response options (10–20, 21–50, 51+). Variations in these recodes comprised the bulk of different measures of frequency.

Frequency approaches—We chose three approaches (from five available) that were ordered on a continuum of lesser to greater summarization and categorization. All preserved zero as a separate response value. Actual Frequency comprised values of 0–9, 15 (midpoint of 10–20), 35.5 (midpoint of 21–50), and 51. Recoded Frequency 4 used an algorithm where 0 = 0, 1–9 = 1, 10–20 = 2, and both 21–50 and 51+ = 3. The last frequency index constructed was termed Variety, as it was conceptualized to only the variety of types of incidents to which an officer had been exposed. Scores on Variety could range from 0–34, with a point given for an item if the officer had endorsed any nonzero frequency.

Severity approaches—Both approaches used only those items on which an officer's frequency rating ≠ 0. An officer's Nomothetic Severity score summed the average sample severity rating (see Table 1) for each item that he or she had experienced. Idiographic Severity summed the officer's own severity rating for each item she or he had experienced. These two indices were formed to emphasize the discrepancy between officers' personal views of critical incident impact based on having experienced the incident and a more collected wisdom or normative view for the average officer.

Combined approach—One index from the four examined was used. It employed an algorithm that weighted the frequency value of an item by the nomothetic severity rating of that same item; in so doing frequency and severity information was considered simultaneously: Actual Frequency * Nomothetic Severity. The other weighted indices we examined did not produce different findings.

Data Analysis

The statistical analyses had eight foci: (a) content validity, (b) properties of different scoring algorithms for the 34 items, (c) distributions of item frequency and severity weights, (d) the correlation across the 34 items between frequency and severity ratings, (e) the reliability of the severity ratings, (f) properties of the different methods of deriving a total score, (g) the relationship of the indices to one another, and finally, (h) the relationship of the indices of total score to other measures and characteristics. Clear skewing required nonparametric approaches.

RESULTS

Characteristics of the Items

Analysis of the content validity of the items required that we first demonstrate that the ratings of the 52 police psychologist judges were reliable. To do so, we calculated two intraclass correlation coefficients (Shrout & Fleiss, 1979) estimating the reliability of the mean relevance rating: the first, a less conservative estimate, merely examined the consistency of ratings across judges; the second, a more conservative estimate, took differences in the mean level among the judges as a source of error. The values achieved were .94 for consistency and .90 for absolute agreement. Given that the ratings of content validity were reliable, we next examined the ratings of item relevance. Across all items and all judges the mean rating was 4.20 on the 1 to 5 scale previously described. Thirty-three of the 34 items received a mean rating greater than 3.52, with the item "Being taken hostage," rated lowest at 2.65.

Frequency and severity data are presented in Table 1. For 19 of the 34 items, the most frequent response was zero. Every item showed a skewed distribution, though there was considerable variability in the degree of skew. Of the 19, some items, such as “Being taken hostage,” were very highly skewed (0 and 1–9 times were the only endorsed responses, which is consistent with all participants providing accurate responses). Others, such as “Encountering a child who had been sexually assaulted,” were considerably less skewed. Only one item was quasinormally distributed: “Encountering an adult who had been badly beaten.” A few yielded more rectangular distributions, of which “Encountering a decaying corpse” is an example. Of the 719 officers who responded to the clearly life-threatening item pertaining to being shot at, 38% reported experiencing the event at least once and nearly 2% reported experiencing the event 10–20 times.

There was considerable variability on the item ratings of severity (see Table 1). Prior to interpreting the average values as meaningful, however, we examined the interrater reliability of those ratings. We calculated an intraclass correlation coefficient using a two-way mixed effect model (Shrout & Fleiss, 1979). The resulting coefficient of .94 for the pooled rating demonstrated the reliability of the severity ratings and established the rationale for a nomothetic approach to severity.

The item rated as most severe was “Making a mistake that led to the serious injury or death of a fellow officer” ($M = 3.81$, $SD = 0.69$). The item rated least severe was “Encountering a dead body” ($M = 1.87$, $SD = 0.96$). It is worth noting that even for this last least stressful item, the response variability (0.96) was approximately one whole response interval, suggesting that the nomothetic view is not monolithic.

As a final view of the relationship between the severity ratings and the frequency of exposure to those incidents, we calculated a rank order correlation (because the distributions were nonnormal) between the two sets of 34 mean values. Consistent with our hypothesis, the result was a coefficient of −.61 ($p < .001$). This indicates a strong negative association between how frequently officers described being exposed to critical incidents and how severe they thought the incidents would be for a typical officer, where severity was understood as the potential of the event to generate or provoke symptoms.

Characteristics of the Indices

As a first step in examining these indices, we calculated means and standard deviations, coefficient alpha, and using the subsample of 54 officers, test-retest reliability for frequency only (see Table 2). The metrics of the indices varied widely, and the distributions were skewed to a greater or lesser degree; in many cases, the standard deviation was at or near half the magnitude of the mean, with the one involving Actual Frequency being the most skewed. Nevertheless, all alpha coefficients exceeded .87 with the exception of the coefficient of .75 for the Variety index. This result is most likely due to the constraint of the dichotomous item format (0 = *didn’t experience the event*, 1 = *did experience the event*). The test-retest coefficients range from .56 for Actual Frequency * Nomothetic Severity to . 66 for Variety.

We next determined intraindex correlations for the set of six indices, using Spearman’s coefficient because of the nonnormality of the distributions (Table 2).

Of the 15 coefficients, 6 were ≥ .90, and 2 were < .75. The average intraindex correlation was .83 showing that, as a set, the indices were highly intercorrelated. Further, Nomothetic and Idiographic Severity were very strongly related ($r_s = .85$), dispelling the idea that having experienced the event fundamentally alters the judgment of an incident’s severity. Nevertheless, Idiographic Severity was the only index with an average $r_s < .80$ making it the

index that was least strongly related to the others. This cannot be explained by unreliability, however, because Idiographic Severity was one of only two indices with coefficient alpha > .90.

The final set of analyses we conducted examined validity relationships between the set of indices and the set of variables hypothesized to show convergent and divergent validity (see Table 3). Given the large sample size, most coefficients were statistically significant, but this is less important than the size of the effect. From the perspective of divergent validity, as predicted, neither education (mean r_S = .00) nor social support (mean r_S = .02) showed any meaningful relationship to the set of lifetime exposure indices. The other measure of trauma exposure, the Trauma History Questionnaire, was the most strongly related to the set of indices (mean r_S = .39). Years of service, as hypothesized, also showed a substantial relationship to lifetime exposure, however measured (range of r_S from .31 to .37), and age (range of r_S from .23 to .28) somewhat less so. As would be expected, age and years of service are related but not fungible.

There was a modest relationship between the cumulative exposure indices and routine work stress; on average, the rank correlation was .15. The measures of peritraumatic dissociation, depression, anxiety, and global symptoms were slightly more related to the set of indices than routine stress (mean r_S = .16, .20, .19, and .23, respectively). The average relationship to the specific measures of PTSD symptoms ranged from .20 to .23. Alcohol use (mean r_S = .06) was less strongly related to exposure than might have been expected.

A key divergent validity issue is whether any of the indices is really different from years of service. Though the correlations of the indices with years of service are in the mid to high . 30s, if years of service were to be as strongly related to the validity variables in Table 3 as any of the six indices, it would suggest that cumulative exposure adds little predictive value to simply knowing how long an officer has had the opportunity to be exposed to traumatic events. To examine this question, we calculated the Spearman correlation between years of service and each of the other 13 validation variables in Table 3. We found that the two other measures of exposure were correlated at .20 and .21, social support at −.13, and the remainder ranged from −.06 to .05, with an average coefficient of zero. This plainly demonstrates that cumulative exposure and years of service are not interchangeable and that the former shows substantive relationships that the latter does not.

The results in Tables 2 and 3 also reveal that none of the indices emerged as an obviously preferred summary score of total exposure (nor did the others we examined). Further analysis of the ranking of the magnitude of validity coefficients also failed to yield a clearly preferable index (analysis not reported).

DISCUSSION

As a method for indexing cumulative exposure, the Critical Incident History Questionnaire items appear to have met the objectives we established: It indexes the history of exposure to the variety of critical incidents that a police officer encounters over the course of a career, and does so stably over time. Regardless of whether the summary index is one of severity, frequency, or a combination of both, the highest correlations are with the two variables that should show the strongest relationships: another measure of trauma exposure and years of service as an officer. These are essential findings in the validity network for constructing an index of cumulative exposure. There is excellent interrater agreement among police officers about the degree of severity of incidents, operationalized as a rating of how much difficulty officers in general would have coping with each of the 34 critical incidents. As hypothesized, there is a strong negative relationship between the mean frequency of

exposure to the set of critical incidents across the sample of officers and the mean rating of the severity of the impact being exposed would have. We also showed that a nomothetic scaling of event severity was nearly interchangeable with scaling based on ratings only of events that officers themselves had experienced. It is reassuring that there appears to be little reason to be concerned that assessment of severity is biased by an officer's actual experience. There is little prior data to demonstrate this in police officers or in the general population.

That our results showed both a clear negative correlation between frequency of incident occurrence and severity of exposure, as well as strong interrater reliability for severity ratings, informs our understanding of the importance of event severity in producing symptomatic response. With the introduction of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (*DSM-IV*; American Psychiatric Association, 1994), the defining features of a traumatic event came to include not merely an objective assessment of incidence or frequency, however crudely measured, but also the type of threat and emotional response to the event. The data on frequency and severity of critical incidents in our police sample suggest that the perceived severity of a particular critical incident may be further understood relative to the likelihood that it will be encountered on the job. It appears, therefore, that potential symptomatic response depends on more than the objective characteristics of the traumatic stressor and these subjective characteristics may well take context into account: Consider, for example, the impact of making a mistake versus merely being in the wrong place at the wrong time. Determining the relative importance of these objective and subjective characteristics will require continued study of police, other first-responders of all kinds, and perhaps those in combat, at various points in their exposure history. More generally, however, this issue applies not only to individuals in roles where exposure is expected, or part of the job, but to the general population as well. The proposal to eliminate Criterion A2 in the *DSM-5* (see Andrews, Charney, Sirovatka, & Regier, 2010) stems from other findings that have similar implications for better understanding the nature of exposure and traumatic events.

We showed that education and social support are not meaningfully related to cumulative exposure, as both relationships are evidence of appropriate divergent validity. As well, we showed that all the convergent variables we examined that should be positively related to indices of cumulative exposure—other measures of exposure, peritraumatic response, stress on the job, and symptom measures—were indeed positively related, though less strongly than we hypothesized. The absence of any relationship between years of service and symptom variables is essential in demonstrating that cumulative exposure measures something in addition to time on the force and concomitant possibility of exposure. Alcohol use did not show the expected relationship. This finding requires further study to investigate whether this was due to the instrumentation quantifying alcohol use or whether this is a substantive finding that reveals a more complex relationship between exposure, symptoms, and coping methods.

As well, our results are at variance with the commonly held view that greater cumulative critical incident exposure is a major determinant of current PTSD symptom levels (e.g., Breslau et al., 1998; Kulka et al., 1990). In our data, the relationship is weaker than in much of the literature. As well, the strength of the relationship between exposure and PTSD symptoms is not appreciably different from the magnitude for other symptom variables, but this finding requires replication because the magnitudes of the differences are small.

As noted above, the absence of a strong relationship between cumulative exposure, however measured, and PTSD symptoms may also depend on a number of factors that are not a direct function of the perceived severity of the incidents. One possible explanation based on

previous work is that prior PTSD symptom development is more predictive of current exposure responses than cumulative frequency and severity of prior incident exposures (Brunet, Boyer, Weiss, & Marmar, 2001; Krinsley, Gallangher, Weathers, Kutter, & Kaloupek, 2003). Whether this is the result of the effects of peritraumatic responses, for example, is not yet known, though the meta-analyses of the predictors of PTSD (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003) point to subjective responses at the time of exposure or afterwards as more salient than either the objective event or categorical characteristics of the individual such as family history of psychopathology.

These data did not support our hypothesis that there would be an advantage in indexing cumulative exposure as a function of frequency and severity. This is so despite reliably different perceptions of event severity. The lack of impact of event severity in the face of reliably different perceptions of critical incident impact suggests that a standard operating assumption about traumatic events may not hold, at least not in police or in first responders more generally. Why this is so is not apparent; further research is required to understand this result.

The limitations of this study merit mention. First, police officers are self-selected and then receive training that is aimed at preparing them for the incidents they will most likely encounter. How training influences the impact of exposure is largely unexplored and may limit the generalizability of our findings. Second, the use of recall for measuring cumulative exposure rather than the compilation of an objective log is a common limitation of collecting retrospective data, though recent work on the National Vietnam Veterans Readjustment Study (Dohrenwend et al., 2006) suggests this limitation may be less of a concern than has previously been assumed. Third, the presence of missing data is a common but nevertheless limiting feature. Fourth, an examination of factors of gender and ethnicity, both in terms of exposure and the relationship of exposure to symptoms, is beyond the scope of this report, but deserves investigation. Fifth, the lack of a cross-validation sample of police or another first responder group dictates additional caution with respect to generalizability regarding the relationship between frequency and severity. That caution needs to extend to the potential conclusion that consideration of severity of traumatic events does not improve prediction of response to cumulative exposure.

Future research should of course be directed at replication of these results in other samples of police and similar groups of first responders. The field would be advanced by the accumulation of more normative data from police officers from other locales, such as small cities and rural communities. More generally, however, future research in this area should be aimed at developing a better understanding of why it is that despite some traumatic events being rarer and more severe, from a cumulative perspective such reliable distinctions do not appear to be as important as has been described.

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Table 1

Percent Endorsement of Critical Incident History Questionnaire Items Ordered by Mean Severity Rating

		Item response category					
Abbreviated Item	***n***	**0**	**1–9**	**10–20**	**21–50**	**51+**	**Severity rating**
Mistake that injures/kills colleague	717	97.8	2.2	0.0	0.0	0.0	3.81
Colleague killed intentionally	714	79.0	20.3	0.6	0.0	0.0	3.76
Mistake that injures/kills bystander	640	97.5	2.3	0.2	0.0	0.0	3.67
Colleague killed accidentally	710	87.6	12.1	0.0	0.0	0.0	3.51
Being taken hostage	718	97.3	2.6	0.0	0.0	0.0	3.49
Colleague injured intentionally	714	52.7	42.6	4.3	0.4	0.0	3.39
Your loved ones threatened	716	65.8	28.2	4.6	0.8	0.6	3.29
Being shot at	719	60.1	38.1	1.8	0.0	0.0	3.23
Badly beaten child	708	33.1	35.9	20.9	7.9	2.3	3.23
Being seriously beaten	716	84.1	15.1	0.4	0.4	0.0	3.18
Kill or injure in the line of duty	716	74.9	23.0	1.8	0.0	0.0	3.16
Sexually assaulted child	714	21.0	40.6	24.5	8.1	5.7	3.11
Exposed to AIDS or other diseases	707	23.9	52.0	17.4	6.6	0.0	3.09
Severely neglected child	712	24.6	40.2	26.4	6.7	2.1	3.07
Trapped in life-threatening situation	716	52.2	39.4	7.5	0.8	0.0	3.02
Threatened with a gun	715	42.5	50.8	6.3	0.4	0.0	2.96
Seriously injured intentionally	713	64.9	29.2	3.4	1.4	1.1	2.92
Colleague injured accidentally	714	47.5	45.4	6.4	0.6	0.0	2.83
Threatened with knife/other weapon	703	34.1	55.2	9.4	1.3	0.0	2.70
Life-threatening man-made disaster	707	82.7	15.7	1.4	0.0	0.0	2.70
Life threatened by toxic substance	713	68.6	25.8	3.9	0.8	0.8	2.62
Shoot but not injure in line of duty	714	84.7	15.0	0.3	0.0	0.0	2.62
Life-threatening natural disaster	714	82.1	17.7	0.3	0.0	0.0	2.60
Seeing someone dying	704	12.4	87.2	0.1	0.3	0.0	2.49
Seriously injured accidentally	714	57.3	38.5	2.4	1.3	0.6	2.46
Making a death notification	700	25.6	42.1	20.6	6.7	4.7	2.42
Life-threatening high speed chase	667	16.7	82.2	0.4	0.0	0.0	2.30

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		Item response category					
Abbreviated Item	***n***	**0**	**1–9**	**10–20**	**21–50**	**51+**	**Severity rating**
Mutilated body or human remains	709	29.2	41.6	21.0	5.4	2.8	2.29
Sexually assaulted adult	704	11.4	36.2	29.6	14.2	8.7	2.29
Badly beaten adult	705	5.0	18.9	33.1	19.9	23.3	2.03
Life threatened by dangerous animal	718	48.1	44.1	6.3	0.8	0.1	2.02
Decaying corpse	714	8.8	40.1	31.1	12.0	8.0	1.98
Animal neglected, tormented, killed	706	25.9	37.2	28.0	5.4	3.4	1.94
Body of someone recently dead	710	1.6	21.7	32.5	20.4	23.8	1.87

Note. AIDS = Acquired immunodeficiency syndrome.

Table 2

Spearman Correlations, Coefficient Alphas, Test-Retest Correlations, and Descriptive Statistics for Six Total Score Indices of Cumulative Exposure

	Spearman correlation									
Cumulative Exposure Index	**1**	**2**	**3**	**4**	**5**	***α***	**Test-retest *r*[a]**	***M***	***SD***	**Max**
1. Actual frequency	—					.87	.63	168.5	126.7	637.0
2. Recoded frequency 4	.94					.91	.65	24.4	11.4	57.0
3. Variety	.74	.91				.75[b]	.66	16.8	6.2	34.0
4. Nomothetic severity	.73	.90	.99			.88	.61	43.8	17.5	96.0
5. Idiographic severity	.62	.77	.85	.85		.91	__[c]	42.2	21.6	129.0
6. Actual × Nomothetic Severity	.99	.95	.75	.75	.64	.88	.56	406.9	315.4	1797.8

Note. $N = 706$. All correlations are statistically significant at $p < .001$.

[a] $n = 54$.

[b] Coefficient α computed using 0 if frequency of endorsement was 0 and 1 if frequency of endorsement >0.

[c] Cannot be computed because severity ratings were not gathered at rerest.

Table 3

Spearman Coefficients and Descriptive Data of Validation Measures With Six Total Score Indices of Cumulative Exposure

	Indices of cumulative exposure							
Variable	**Actual frequency**	**Recoded frequency 4**	**Variety**	**Nomothetic severity**	**Idiographic severity**	**Actual × Nomothetic**	***M***	***SD***
Years of education	−.04	−.01	.02	.02	.00	−.03	3.03	0.94
Age	.28	.28	.23	.23	.27	.28	37.06	6.87
Years of service	.37	.37	.31	.31	.33	.37	12.59	6.57
Social support	.01	.00	−.04	−.04	−.04	.01	3.74	0.50
Alcohol use	.04	.05	.08	.08	.07	.04	8.53	4.82
Trauma history	.37	.41	.43	.42	.36	.37	17.77	9.32
Civilian trauma history	.23	.25	.26	.26	.22	.23	5.75	3.96
Work stress	.12	.15	.17	.17	.18	.12	−0.21	0.48
Peritraumatic dissociation	.13	.17	.20	.21	.25	.13	1.99	0.80
Depression	.15	.19	.24	.24	.22	.15	0.53	0.55
Anxiety	.17	.19	.21	.21	.21	.17	0.30	0.42
Global symptoms	.19	.22	.26	.26	.26	.19	0.40	0.38
PTSD symptoms	.16	.19	.21	.21	.25	.16	62.20	14.50
Intrusion	.19	.23	.25	.25	.27	.19	0.50	0.65
Avoidance	.13	.18	.24	.24	.28	.13	0.59	0.72
Hyperarousal	.15	.19	.23	.23	.25	.16	0.31	0.54

Note. *N* ranges from 640 to 706. See Method section for a description of how each index was computed. For r_S = .07, p = .05, for r_S = .09, p = .01 and for r_S = .12, p = .001. PTSD = Posttraumatic stress disorder.