

Measuring Emergency Department Staff Perceptions of Causes and Management of Violence

Julia Ewen, BSN, RN ■ Lisa Gaeta, DNP, MSN, RN, CEN  ■
 Karen A. Fitzgerald, MS, RN, AGCNS-BC, CCRN ■ Barbara L. Ragione, DNP, MS, RN, CPHIMS  ■
 Deborah A. Feil, MSN, RN, CMSRN  ■ Christopher C. Raio, MD  ■
 Abenamar Arrillaga Jr, MD, FACS, FCCP  ■ Lauren R. Klein, MD, MS ■
 Patricia A. Eckardt, PhD, RN, FAAN 

BACKGROUND: Half of all reported violent incidents in health care settings occur in the emergency department (ED) placing all staff members at risk. However, research typically does not include all ED work groups or validated measures beyond nurses and physicians.

OBJECTIVE: The aims of this study were to (a) validate an established instrument measuring perceptions of causes of violence and attitudes toward managing violence within an inclusive workforce sample; and (b) explore variation in perceptions, attitudes, and incidence of violence and safety to inform a violence prevention program.

METHODS: This is an investigator-initiated single-site cross-sectional survey design assessing the psychometric properties of the Management of Aggression and Violence Attitude Scale (MAVAS) within a convenience sample ($n = 134$). Construct validity was assessed using exploratory factor analysis and reliability was evaluated by the Cronbach's α estimation. Descriptive, correlational, and inferential estimates explored differences in perceptions, attitudes, and incidence of violence and safety.

RESULTS: Exploratory factor analysis indicated validity of the MAVAS with a seven-factor model. Its internal consistency was satisfactory overall (Cronbach's $\alpha = 0.87$) and across all subscales (Cronbach's α values = 0.52–0.80). Significant variation in incidence of physical assault, perceptions of safety, and causes of violence was found between work groups.

CONCLUSIONS: The MAVAS is a valid and reliable tool to measure ED staff members' perceptions of causes of violence and attitudes toward managing violence. In addition, it can inform training according to differences in work group learner needs.

KEY WORDS: assault, emergency department, instrument validation, staff perceptions, trauma, workplace violence

Cite as: Ewen, J., Gaeta, L., Fitzgerald, K. A., Ragione, B. L., Feil, D. A., Raio, C. C., Arrillaga, A., Klein, L. R., & Eckardt, P. A. (2023). Measuring emergency department staff perceptions of causes and management of violence. *Journal of Trauma Nursing*, 30(6), 307-317. <https://doi.org/10.1097/JTN.0000000000000749>

Violence against health care workers is a major issue, with reported staff victimization ranging from 50% to 95% (Aljohani et al., 2021; Richardson et al., 2018). Not surprisingly, emergency department (ED) personnel represent more than 50% of reported incidents of assault within health care settings (Holland et al., 2021; Roppolo et al., 2020). All members across the ED workforce are subject to risk of violence, including nurses, physicians, secretarial, and ancillary staff (Carver & Beard, 2021; Copeland & Henry, 2017). Accordingly, best practices to prevent workplace violence include

staff training and education, identification of potential events, de-escalation measures, appropriate multidisciplinary interventions, and coordination across an inclusive ED workforce (Carver & Beard, 2021; Mitra et al., 2018; Roppolo et al., 2020).

However, systematic reviews and meta-analyses found that more than 97% of research studies on ED workplace violence prevention in the past 11 years focused on physician and nurses (Aljohani et al., 2021; Chakraborty et al., 2022). Many of these studies used the Management of Aggression and Violence Attitude Scale (MAVAS) as an assessment of staff perceptions of the causes of violence and methods of violence management to determine *Workplace Violence* training needs and training effectiveness (Cheung et al., 2018; Soares & de Vargas, 2013). Although these two ED work groups lead and implement most workplace violence prevention efforts, all ED work groups interact with patients and families and can participate in prevention efforts and violence mitigation. In addition, if instruments, such as the MAVAS, are used for assessment in

Dates: Submitted May 25, 2023; Revised August 25, 2023; Accepted, August 30, 2023.

Author Affiliations: Good Samaritan University Hospital, West Islip, New York (Mss Ewen and Fitzgerald and Drs Gaeta, Ragione, Raio, Arrillaga, Klein, and Eckardt); and Molloy University, Rockville Centre, New York (Ms Feil and Dr Eckardt).

The authors declare no conflicts of interest.

Correspondence: Patricia A. Eckardt, PhD, RN, FAAN, Good Samaritan University Hospital, 1000 Montauk Highway, West Islip, NY 11795 (patricia.eckardt@chsli.org).

KEY POINTS

- All ED staff members are at highest risk for workplace violence.
- The MAVAS instrument is a reliable and valid measure of ED staff attitudes regarding workplace violence.
- The MAVIS instrument may help identify best practices to reduce workplace violence.

a new population, they need to be externally validated beyond nurses and physicians to inform sustainable ED workplace violence prevention programs (Messerly & Marceaux, 2020; Walters et al., 2016).

The framework Duxbury (2002) used to develop the MAVAS instrument incorporated explanations for the causes of patient aggression and violence in health care from different perspectives. These are the internal, external, and situational models. Each model addresses constructs of focus, including patient attributes, environmental factors, and staff–patient interaction, respectively (Duxbury, 2002, 2003).

OBJECTIVE

The aims of this study were to (1) validate the MAVAS in an inclusive ED work group sample and (2) in the validated sample(s) to explore their reported perceptions of safety, approaches to manage violence and aggression, and experiences with violence in the ED to inform a multidisciplinary workplace violence prevention program.

METHODS**Study Design**

This is an investigator-initiated single-site noninterventive retrospective cross-sectional survey design assessing the psychometric properties of the MAVAS within a convenience sample representing ED workforce groups. The Good Samaritan University Hospital Institutional Review Board (IRB) acknowledged the study as exempt status (IRB#: 2022.07.21.05). In addition, this study conforms with the Strengthening the Reporting of Observational Studies in Epidemiology guidelines (von Elm et al., 2007) and the Streiner and Kottner Recommendations for Reporting the Results of Studies of Instrument and Scale Development and Testing (Streiner & Kottner, 2014).

Population and Setting

The study was conducted within a Northeastern U.S. suburban, community, Level I adult trauma center with more than 120,000 annual admissions. All ED staff members employed by the institution during May 1, 2022, to June 30, 2022, were eligible to participate in

the study. Our recruitment strategy included signs posted in private staff lounges and break rooms describing the study and a quick-response (QR) code and hyperlink address to access the confidential survey. A convenience sampling methodology was used. There was no financial incentive to participate in the survey and the average time to complete the survey instrument was 5 min.

Data Collection and Instruments

Data were collected via electronic responses on the SurveyMonkey Health Insurance Portability and Accountability Act (HIPAA) compliant software platform. Data were downloaded from the SurveyMonkey platform as a comma separated value (.csv) file at the end of the survey period. Full completion of the survey was voluntary. As such, some items may have been left blank if respondents were unsure of how they wanted to answer, and possibly through human error of missing an item. Partial completed data were included where appropriate in descriptive analyses for demographic items. Incomplete surveys ($n = 16$) were not included in the item analysis, reliability analysis, and exploratory factor analysis.

Demographic Variables

Self-reported demographic variables of gender, highest educational level completed, role/work group, years in current role, years employed in any ED setting, years in current ED setting were collected. These data were used to provide descriptives of the population sampled for psychometric validation of the MAVAS instrument. Demographic data were further used to stratify participant responses by ED work groups.

Management of Aggression and Violence Attitude Scale

The original 27-item MAVAS was based on three constructs of the causes of aggression and violence ($n = 14$ items) and perceptions of approaches to manage violence and aggression ($n = 13$ items). The three constructs of the causes of aggression are internal/biological ($n = 4$), external/environmental ($n = 4$), and interactional/situational ($n = 5$). The internal/biological construct consists of internal or biological items that can cause or influence aggressive and violent behavior. The external/environmental construct consists of items reflecting physical or social factors that may affect aggressive and violent behavioral tendencies. Finally, the interactional/situational construct focuses on interpersonal relationships or interactions that can increase or decrease aggressive and violent behaviors (Duxbury, 2003).

The MAVAS is scored on a 5-point Likert scale (i.e., 1 = “strongly agree” to 5 = “strongly disagree”). Higher scores reflect lower levels of the respondents’ agreements with the items. The MAVAS score has

been used to estimate staff attitudes regarding Duxbury's explanatory constructs of causes of aggression and violence, and to also compare those attitudes with perceptions of various approaches to manage patient violence and aggression (Pulsford et al., 2013). The MAVAS has demonstrated satisfactory psychometric properties of validity with factor analysis supporting a four-factor model (with each loading at .8 and above) and interitem and test-retest reliability estimates ($r = .80$, $r = .97$) across nursing and physician populations (Duxbury, 2002, 2003; Pulsford et al., 2013; Wong & Chien, 2017). In addition, the MAVAS was found reliable ($r = .87$) in an adult inpatient mental health patient population ($n = 20$) during the initial piloting of the instrument (Duxbury, 2002).

Incidence of Assault/Violence

Although institutional policy includes reporting incidence of assault, staff incidence of assault or experienced violence in the workplace is underreported across patient care settings (McGuire et al., 2021, 2023; Mento et al., 2020). To record accurate data of staff incidence of assault, six investigator-developed items were included in the survey. The items were: (1) Have you been verbally assaulted at work within the past 12 months?; (2) If yes, did you file a report of the incident?; (3) Who did you file the report with?; (4) Have you been physically assaulted at work within the past 12 months?; (5) If yes, did you file a report of the incident?; (6) Who did you file the report with? The items measuring incidence of assault/violence comprise an index of self-reported occurrences and validity estimation include discriminant and convergent validity (Streiner, 2003).

Perception of Safety at Work

To decrease participant burden, perception of safety at work was estimated on a one-item Visual Analogue Scale of 0 = not safe at all and 100 = completely safe (Heller et al., 2016). The responses to perception of safety at work were then used to estimate convergent and discriminant validity with responses of reported assault within the past 12 months.

Open-Ended Item

As the issue of workplace violence in the ED is important to all to maintain a safe and healthy work environment, one open-ended item, "Please provide any further comments here" was the last item in the survey. The item was to allow the participants to provide any additional feedback regarding workplace violence, safety in the ED, or the study.

Statistical Analysis and Power Calculation

This was a noninterventive quantitative study to assess the psychometric properties of the MAVAS

within an inclusive ED staff sample. The analysis was completed using IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows, Version 28 (IBM Corp; Armonk, NY) and Stata Statistical Software: Release 17 (StataCorp LLC; College Station, TX).

The suggested minimal sample size for adequate power with an exploratory factor analysis is a minimum of five participants per item (Kyriazos, 2018). The MAVAS is a 27-item instrument; therefore, 134 participants would provide adequate power to answer the primary aim of this study. For inferential analyses a two-tailed testing approach with a chosen significance level of $p < .05$ was used. Independent sample *T* tests were used to compare groups with continuous outcomes. The chi-square test for Independence and Fisher's exact test were conducted to analyze categorical data if more than 20% of cells had expected counts less than five. In addition, adjusted residuals (ARs) were estimated to determine categories with significant differences between observed and expected counts. Values less than -2 or more than $+2$ were the cutoffs for determining significant associations for individual cells (Sharpe, 2015).

Psychometric Testing

Validity

Constructs are unobservable, or latent, phenomena that one cannot measure directly, such as attitudes. In measurement research, scales that are composed of statement or question items, provide an indirect approach to estimate properties of an unobservable construct through a series of accuracy (validity) and repeatability (reliability) testing within a given population (Cotter et al., 2018; McElligott et al., 2018). Therefore, to establish the construct validity of the MAVAS within an inclusive ED workforce exploratory factor analysis was employed before further analysis of reliability or patterns of responses. First, the factorability of the MAVAS data within this sample was examined using the Bartlett's test of sphericity (acceptable $p < .05$) and Kaiser-Meyer-Olkin (KMO) test (index value of KMO > 0.6). The eigenvalues of the factors in the MAVAS were examined within the scree plot (in SPSS), in which the shape of the curve was expected to change direction and become horizontal after four observations above one. All factors above the elbow, or the break in the plot, would contribute to the largest proportion of the total variance of the construct of attitude toward violence and management of aggression in the sample. Varimax rotation was chosen to extract the significant domains of the MAVAS due to the assumption of the noncorrelated responses across factors.

Additionality to estimate the validity of the Visual Analogue Scale measure of perception of safety at work, correlations, and independent sample *t* tests of

participants' reported physical assault within the past 12 months and Visual Analogue Scale responses were conducted. As reported physical assault was measured as a dichotomous variable and the Visual Analogue Scale perception of safety as a continuous variable, the point biserial correlation coefficient was used for this correlational estimate.

Reliability

Reliability of the MAVAS was established with Cronbach's α internal consistency estimates. In addition, reliability of the MAVAS four subscales was estimated.

Item Analysis

Estimates of central tendency and dispersion were conducted for the 27 items in the MAVAS. Comparison of mean and standard deviation estimates were made for the total sample of the inclusive ED workforce across items and subscales. Furthermore, as the MAVAS has not yet been evaluated in an ED sample beyond physicians and nurses, two subsamples of all ED work groups were created and responses were compared across items and subscale responses. These subsamples were (1) physician and nurses in which the MAVAS has been previously psychometrically validated and (2) the remainder of the participant in other ED work groups, excluding physician and nurses.

RESULTS

Response Rate and Missing Data

Of the total number of ED employees who met inclusion criteria, 134 of 338 participated in the study resulting with a response rate of 40%. Within the "physician and nurse" work group, there was no missing data for the demographic responses for "ED position." Within demographic items, there were less than one cases of missing data, ranging from ($n = 8, 6\%$) of data missing for educational level to ($n = 3, 2\%$) for gender. For testing reliability and item analysis, cases were excluded listwise deletion based on all variables in the procedure ($n = 6, 5\%$) (Table 1).

Demographics

Of the participants, the majority were bachelor's prepared ($n = 61, 48.4\%$), women ($n = 93, 71.0\%$), and were nurses ($n = 55, 41.0\%$). Study participants reported an average of ($M = 8.2, SD = 8.4$) years worked in their current profession, ($M = 6.1, SD = 6.5$) years worked in any ED, and ($M = 5.4, SD = 8.5$) years worked in the current facility's ED (Table 1). Participants were further categorized into following two work groups: "physician and registered nurses" ($n = 77, 57\%$) and "other" ($n = 57, 43\%$). The "physician and registered nurses" group includ-

ed physicians, registered nurses (RNs), nurse practitioners, and physician assistants. The "other" work group included technician assistants, nurse assistants, registrars, unit clerks, concierge, phlebotomists, security, and social workers.

Item Analysis

MAVAS Items

The full sample indicated similar means for each subscale, with differences in subscale means the highest between the two work groups for "external environment." The highest average item indicating strong disagreement with the item statement on the MAVAS instrument was "Views - Approach 3" ($M = 3.81, SD = 1.3$) (Table 2). The lowest averaged items on the MAVAS instrument were "Internal - Bio 3" ($M = 1.53, SD = 0.8$) and "Views - Approach 13" ($M = 1.53, SD = 0.8$) (Table 2).

There were similarities between the two work groups, with few notable differences (Table 2). Among both the "physicians and registered nurses" work groups, and the "other" work group, "Internal - Bio 4" ($M = 3.8, SD = 1.2$) was the highest average item. Furthermore, "Internal - Bio 3" ($M = 1.6, SD = 0.7$) was the lowest average for both work groups. Similar to the full sample and "physician and registered nurses" work groups, the work group "other" averaged "Views - Approach 3" ($M = 3.8, SD = 1.4$) highest. Item "Views - Approach 13" ($M = 1.5, SD = 0.8$) had the lowest average among the "other" work group.

For the majority of responses to items on the MAVAS, RNs' averages were above the sample mean ($n = 25, 93\%$). Of the 27 physicians, ($n = 24, 88.9\%$) found average responses below the sample's mean for the MAVAS items. Items that physicians' averaged higher than the sample mean included "External - Environmental 2," where physicians' averaged ($M = 2.3, SD = 1.0$) over the sample ($M = 2.1, SD = 1.0$) physicians had the lowest mean ($M = 2.1, SD = 1.1$) for item "Views - Approach 11" compared with the highest mean for NAs ($M = 3.1, SD = 1.3$).

For item "Views - Approach 4," physicians had the lowest mean ($M = 2.7, SD = 1.2$) versus security with the highest mean ($M = 3.8, SD = 1.1$). Similarly, on "Views - Approach 5," physicians once again had the lowest mean among the groups ($M = 2.8, SD = 1.3$), with security having the highest mean ($M = 4.0, SD = 1.3$). Nurses were found to have the highest mean ($M = 2.5, SD = 1.1$) for item "Views - Approach 7" compared with registrars who were found to have the lowest mean ($M = 1.3, SD = 0.5$).

"Interactional - Situational 3" ($M = 2.22, SD = 1.2$) indicated similarity among the diverse ED positions. Registrars ($M = 2.17, SD = 1.6$), NAs ($M = 1.95, SD = 1.1$), technical assistants ($M = 1.82, SD = 1.3$), and security ($M = 1.73, SD = 1.2$) were below the sample

Table 1. Demographics (*N* = 134)

Characteristic	Statistic		Missing	
	<i>N</i>	%	<i>N</i>	%
Educational level			8	6
High school	30	23.80		
Associate	1	0.80		
Bachelors	61	48.40		
Masters	16	12.70		
Doctoral	15	11.90		
Postdoctorate	3	2.40		
Gender			3	2.20
Female	93	71		
Male	38	29		
ED staff position			0	
Registered nurse	55	41		
Physician	18	13.40		
NP	1	0.70		
PA	3	2.20		
NA	19	14.20		
TA	11	8.20		
Registrar	6	4.50		
Unit clerk	3	2.20		
Concierge	2	1.50		
Phlebotomist	3	2.20		
Security	11	8.20		
Social work	2	1.50		
	\bar{x}	SD		
Years in current role				
Years worked in current profession	8.2	8.4	4	3
Years worked in any ED	6.1	6.5	5	4
Years worked in current hospital's ED	5.4	5.8	5	4

Note. ED = emergency department; NA = nursing assistant; NP = nurse practitioner; PA = physician assistant; TA = technical assistant.

average. Overall, registered nurses ($M = 2.49, SD = 1.1$) and physicians ($M = 2.44, SD = 1.3$) were above the sample mean.

Aggression and Violence Items

There were no significant differences in incidence of verbal or physical assault, or perception of safety by gender ($\chi^2[130] = 0.08, p = .772; \chi^2[129] = 0.01, p = .971; t[126] = 1.2, p = .263$). In addition, years of experience was not correlated with incidence of verbal assault, physical assault, or perception of safety $r_b(130) = .002, p = .999, r_b(129) = -.032, p = .715, \text{ and } r(128) = .122, p = .171, \text{ respectively. However, significant variation in incidence of physical assault, } \chi^2(130) = 34.81,$

$p = .001$ was found between ED workforce groups. Security guards reported significantly more incidence of physical assault than would be expected ($AR = +2.8$).

Reliability

The MAVAS instrument was found to be reliable (Table 3) with this study's sample ($n = 27; \alpha = .872$). The subscale with the lowest Cronbach's α was "Internal – Biological" ($n = 4; \alpha = .521$). Discriminant and convergent validity of perception of safety Visual Analogue Scale was established with $r_b(130) = .475, p < .001$ and $t(130) = 6.1, p < .001$, respectively.

Validity

The MAVAS instrument was validated with this study sample (Table 4). The KMO value was 0.803, and Bartlett's test of sphericity was significant ($p < .001$), suggesting that the correlation matrix was appropriate for exploratory factor analysis. The exploratory factor analysis of the MAVAS yielded a seven-factor model, explaining 63.03% of the total variance. The factors were interpreted following a varimax rotation. Factors were suppressed under 0.4 to minimize cross-loadings and increase the likelihood that the factors represent meaningful and distinct underlying constructs. Factor 1 identified eight items with loadings ranging from 0.422 to 0.777. Factors 2, 3, and 5 loaded four items with loadings ranging from 0.530 to 0.827, 0.543 to 0.788, and 0.508 to 0.728, respectively. Factors 4 and 7 had two items with loadings ranging from 0.530 to 0.827 and 0.416 to 0.752, respectively. Factor 6 loaded with three items ranging from 0.543 to 0.788. There were no negative loadings. Two items, Views – Approach 5 "Physical restraint is sometimes used more than necessary" and Internal-Biological 1 "It is difficult to prevent patients from becoming violent or aggressive." cross-loaded on Factors 2 and 3 and Factors 5 and 7, respectively (Figure 1).

Although different than the four constructs validated in previous studies with nurse and physician samples, the seven-factor structure found with this sample's exploratory factor analysis supported the original conceptual framework used by Duxbury for the 27-item scale construction. The underlying latent constructs identified with this sample were (1) environmental and interactional causes of aggression and violence; (2) communication and progressive approaches of management; (3) reactional approaches of management; (4) consistency or effectiveness of management approaches; (5) internal psychological locus of causes of aggression and violence; (6) pharmacological approaches of management; and (7) internal physiological locus of causes of aggression and violence.

DISCUSSION

The response rate was sufficient, and all ED work groups were represented supporting the internal validity of the findings. In addition, there were fewer missing

Table 2. Item Analysis (*N* = 27)

Item Statistics	All Scales		Physician Nurses		Other	
	Mean	SD	Mean	SD	Mean	SD
Views – Approach	2.6	0.6	2.6	0.6	2.6	0.6
Views_Approach_1 When a patient is violent, seclusion is one of the most effective approaches to use.	2.5	1.2	2.7	1.2	2.4	1.2
Views_Approach_2 Patients who are violent are often restrained for their own safety.	1.7	1	1.8	1	1.7	0.9
Views_Approach_3 The practice of secluding violent patients should be discontinued.	3.8	1.3	3.8	1.3	3.9	1.4
Views_Approach_4 Expressions of aggression do not always require staff intervention.	3.3	1.4	3.1	1.4	3.5	1.4
Views_Approach_5 Physical restraint is sometimes used more than necessary.	3.3	1.4	2.3	1.3	3.9	1.3
Views_Approach_6 Alternatives to the use of containment and sedation to manage patient violence could be used more frequently.	2.5	1.2	2.5	1.1	2.4	1.3
Views_Approach_7 Patient aggression could be handled more effectively on this ward.	2.3	1.2	2.3	1.1	2.3	1.3
Views_Approach_8 Seclusion is sometimes used more than necessary.	3.4	1.2	3.3	1.2	3.5	1.3
Views_Approach_9 Prescribed medication should be used more frequently to help patients how are aggressive and violent.	1.8	1	2	1	1.5	0.8
Views_Approach_10 Different approaches are used on this ward to manage patient aggression and violence.	2.3	1.1	2.3	1.1	2.3	1.2
Views_Approach_11 The use of de-escalation is successful in preventing violence.	2.6	1.1	2.5	1.1	2.7	1.1
Views_Approach_12 Patients who are aggressive toward staff should try to control their feelings.	2.1	1.1	2.1	1	2	1.1
Views_Approach_13 Medication is a valuable approach for treating aggressive and violent behavior.	1.5	0.8	1.6	0.9	1.4	0.8
Views_Approach_14 Prescribed medication can in some instances lead to patient aggression and violence.	2.9	1.2	2.8	1.2	3	1.2
External – Environment	2.4	0.9	2.4	0.9	2.3	0.8
Extnl_Envio_1 Patients are aggressive because of the environment they are in.	2.8	1.2	2.7	1.2	2.8	1.3
Extnl_Envio_2 Restrictive care environments can contribute toward patient aggression and violence.	2.1	1	2.3	1	1.9	1
Extnl_Envio_3 It is largely situations that contribute toward the expression of aggression by patients.	2.1	1	2.3	1.1	1.9	0.9
Extnl_Envio_4 If the physical environment were different, patients would be less aggressive.	2.4	1.2	2.3	1.2	2.5	1.3
Interaction – Situational	2.4	0.9	2.4	0.8	2.4	0.9
Intxn_Sit_1 Other people make patients aggressive or violent.	2.3	1.1	2.3	1.1	2.3	1

(continues)

Table 2. Item Analysis (*N* = 27) (Continued)

Item Statistics	All Scales		Physician Nurses		Other	
	Mean	SD	Mean	SD	Mean	SD
Intxn_Sit_2 Patients commonly become aggressive because staff do not listen to them.	2.8	1.4	2.8	1.3	2.8	1.4
Intxn_Sit_3 Poor communication between staff and patients leads to patient aggression.	2.2	1.2	2.4	1.2	1.9	1.2
Intxn_Sit_4 The use of negotiation could be used more effectively when managing aggression and violence.	2.6	1.1	2.5	1.1	2.7	1.2
Intxn_Sit_5 Improved one-to-one relationships between staff and patients can reduce the incidence of patient aggression and violence.	2	1.1	1.9	1	2.2	1.2
Internal – Biological	2.5	0.7	2.5	0.8	2.5	0.7
Intrnl_Bio_1 It is difficult to prevent patients from becoming violent or aggressive.	2.1	1.2	2.2	1.1	2.1	1.2
Intrnl_Bio_2 Patients are aggressive because they are ill.	2.7	1.2	2.6	1.2	2.7	1.2
Intrnl_Bio_3 There appear to be types of patients who frequently become aggressive toward staff.	1.5	0.8	1.6	0.7	1.5	0.8
Intrnl_Bio_4 Aggressive patients will calm down automatically if left alone.	3.8	1.2	3.8	1.2	3.8	1.2
	2.6	0.6	2.6	0.6	2.6	0.6

data than anticipated. The lack of significant variation in item analyses between the physicians/nurses and other work groups supports the conclusion that the MAVAS is an appropriate tool to measure perceptions of causes of violence and attitudes toward managing violence of an inclusive work group.

The MAVAS' reliability findings indicate that the MAVAS tool is consistent in measuring the proposed constructs of perceptions of aggression and violence. However, while overall the sample was consistent in their responses to the MAVAS instrument, opportunities for addressing learning needs were identified in the items from the subscale of "Internal – Biological," which include items such as "Aggressive patients will calm down automatically if left alone." This was the subscale with the lowest internal

consistency, suggesting that the four Internal – Biological items originally established in the development of the MAVAS instrument were capturing more than one factor. The items were related to behavioral components that many nonbehavioral ED staff members may not have training or education in. The results indicate there can be tailored educations to meet the training needs for the diverse work groups that staff the ED.

In addition, the original subscale "Views – Approach" indicated there were items high variability in responses. Particularly, Items 2 ($M = 3.84, SD = 1.33$), 3 ($M = 3.32, SD = 1.40$), and 5 ($M = 3.3, SD = 1.34$) which were statements about the appropriateness and frequency of using restraints. Item 2 supports the attitude that restraints were for patients' own safety, whereas Item 5 supports the attitude that restraints were used too often. These results align with "Views – Approach" being the subscale with the second lowest estimate of internal consistency for this sample when using the original MAVAS' subscale structure for estimation. These results support the notion that restraint use is a highly complex issue with serious implication on patient safety (both protective and potential harm), liability, medicolegal ramifications, as well as a perceived alignment with law enforcement that differentially affects different job classes. This suggests an opportunity for further exploration of training and education needs in workplace violence for different members of the ED workforce.

Table 3. Reliability Estimates (*N* = 27)^a

MAVAS/Subscales	Items	Cronbach's α
Views – Approach	14	0.729
External – Environment	4	0.753
Interactional – Situational	5	0.797
Internal – Biological	4	0.521
Full Scale	27	0.872

Note. MAVAS = Management of Aggression and Violence Attitude Scale.

^aWhen estimating reliability of an instrument, the overall instrument is referred to as a scale and the hypothesized constructs from the theoretical model are referred to as subscales.

Table 4. Full Sample Exploratory Factor Analysis ($N = 118$)^a

Item	Factor						
	1	2	3	4	5	6	7
Medication is a valuable approach for treating aggressive and violent behavior.						0.725	
It is largely situations that contribute toward the expression of aggression by patients.	0.422						
Poor communication between staff and patients leads to patient aggression.	0.696						
Restrictive care environments can contribute toward patient aggression and violence.	0.777						
If the physical environment were different, patients would be less aggressive.	0.707						
Patients commonly become aggressive because staff do not listen to them.	0.654						
Prescribed medication should be used more frequently to help patients how are aggressive and violent.						0.748	
Patients are aggressive because of the environment they are in.	0.684						
Different approaches are used on this ward to manage patient aggression and violence.				0.937			
Patient aggression could be handled more effectively on this ward.				0.935			
Other people make patients aggressive or violent.	0.640						
The use of negotiation could be used more effectively when managing aggression and violence.		0.846					
The use of de-escalation is successful in preventing violence.		0.827					
There appear to be types of patients who frequently become aggressive toward staff.						0.533	
Alternatives to the use of containment and sedation to manage patient violence could be used more frequently.	0.459						
Patients who are violent are often restrained for their own safety.					0.658		
The practice of secluding violent patients should be discontinued.			0.723				
Prescribed medication can, in some instances, lead to patient aggression and violence.			0.788				
Improved one-to-one relationships between staff and patients can reduce the incidence of patient aggression and violence.		0.711					
Patients who are aggressive toward staff should try to control their feelings.					0.537		
It is difficult to prevent patients from becoming violent or aggressive.					0.508		0.416
Expressions of aggression do not always require staff intervention.			0.543				
Seclusion is sometimes used more than necessary.			0.634				
When a patient is violent, seclusion is one of the most effective approaches to use.					0.728		
Patients are aggressive because they are ill.							0.752
Aggressive patients will calm down automatically if left alone.							0.705
Physical restraint is sometimes used more than necessary.		0.530	0.484				

^aWhen estimating the validity of an instrument, the hypothesized constructs from the theoretical model are represented by items loading on factors.

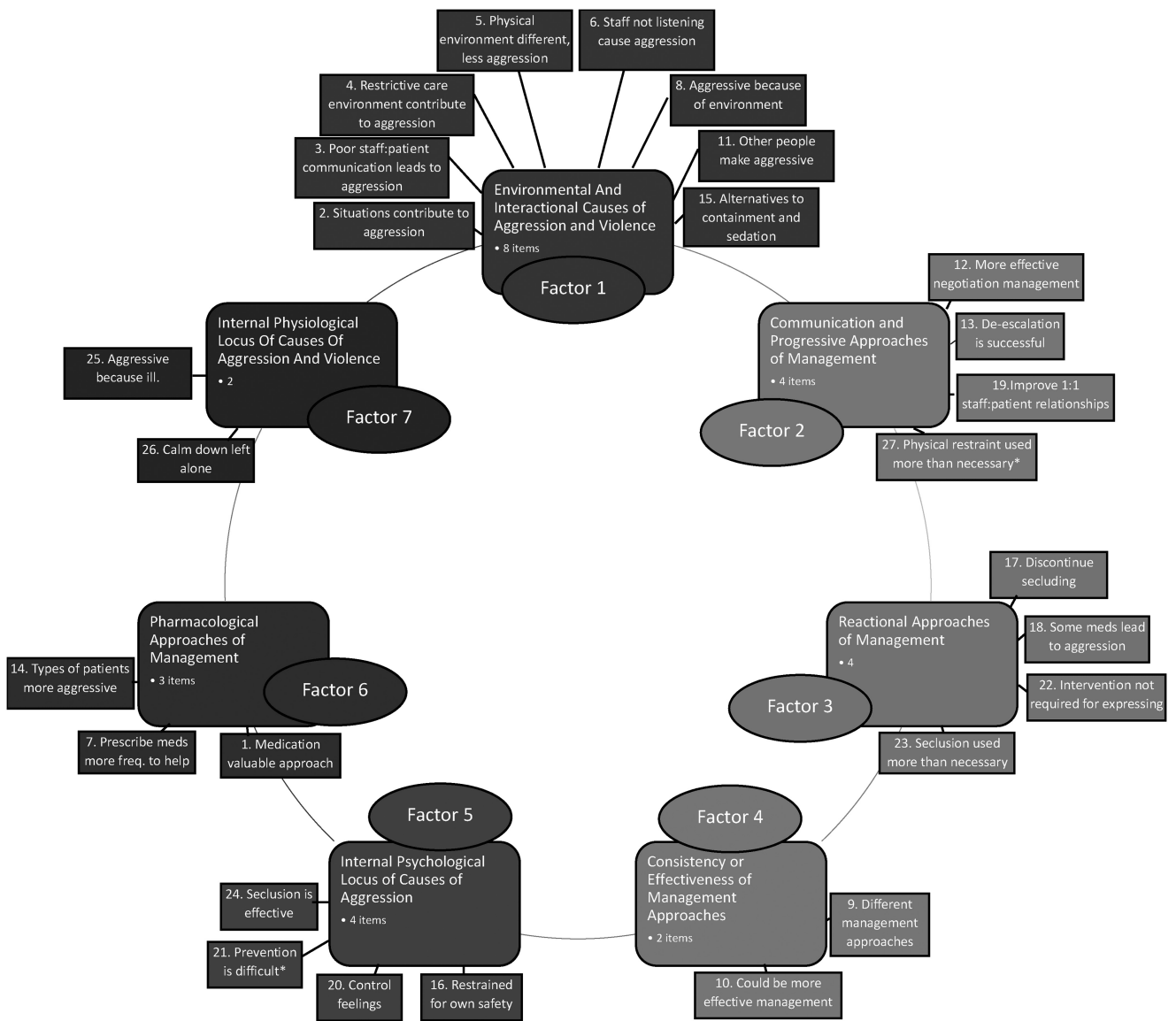
Similarities found in subscales “Interactional – Situational.” There may be some perception that there is a deference to physicians on topics such as pathophysiology of agitation and violence. It is possible, too, that the ED has culture in place that facilitates similar perceptions of how aggression and violence were handled for items related to “Interactional – Situational.” Certain topics may discourage disagreement with management if someone perceives it is out of their level of training.

Interestingly, the validity of the MAVAS within an inclusive ED workforce sample was different than the four constructs validated in previous studies with nurse and physician samples. The seven-factor structure found

with this sample’s exploratory factor analysis supported the original conceptual framework used by Duxbury for the 27-item scale construction. With these new factors identified, the MAVAS can be used for assessment and training within an inclusive ED workforce.

LIMITATIONS

Although the sample was representative of the population of interest, this was a single-site design limiting generalizability of findings. Potential selection bias is also a potential limitation as convenience sampling was used and self-selection into the study may impact internal validity. In addition, though the sample size was



*Items that cross-loaded were kept in the factor they loaded higher in.

Figure 1. Exploratory factor analysis.

sufficient for the proposed exploratory analysis, a larger sample size will provide the opportunity to perform an exploratory and confirmatory analysis within this population. As such, our planned next steps include validating the MAVAS across our system EDs using an inclusive ED workforce sample.

CONCLUSIONS

The validity of the MAVAS was established for an inclusive ED workforce sample. However, further testing with a larger inclusive ED workforce will allow for confirming the hypothesized underlying structure with an exploratory factor analysis and confirmatory factor analysis. As identified in the results, some work groups

require specific education on topics that may not have been originally intrinsically linked to their roles. Multiple studies have demonstrated the effectiveness of universal training of ED staff in workplace violence prevention and management. The evidence from this study provides a framework for using the MAVAS instrument as a measure of all ED work groups' perceptions of violence and aggression in the ED, and identify learner needs in prevention and management of aggression and violence.

Acknowledgment

The authors thank Theresa Tomkin, MS-APRN, ANP-C, the Nursing Director of the Emergency Department, Good

Samaritan University Hospital. She mentored the nurse ED residents through the Quality Improvement project that resulted in an interdisciplinary research study that had her full support. In addition, the authors express their gratitude to Sarah A. Eckardt, MS, BA, data scientist and biostatistician, for her expertise and patience with reviewing the manuscript and provided thoughtful direction.

Orcid iDs

Lisa Gaeta  <https://orcid.org/0009-0004-8898-0476>
 Barbara L. Ragione  <https://orcid.org/0000-0001-7377-9092>
 Deborah A. Feil  <https://orcid.org/0009-0001-7163-222X>
 Christopher C. Raio  <https://orcid.org/0000-0002-4352-3704>
 Abenamar Arrillaga Jr,  <https://orcid.org/0009-0007-1924-0601>
 Patricia A. Eckardt  <https://orcid.org/0000-0002-6203-6338>

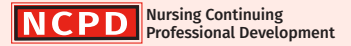
REFERENCES

- Aljohani, B., Burkholder, J., Tran, Q. K., Chen, C., Beisenova, K., & Pourmand, A. (2021). Workplace violence in the emergency department: A systematic review and meta-analysis. *Public Health, 196*, 186–197. <https://doi.org/10.1016/j.puhe.2021.02.009>
- Carver, M., & Beard, H. (2021). Managing violence and aggression in the emergency department. *Emergency Nurse, 29*(6), 32–39. <https://doi.org/10.7748/en.2021.e2094>
- Chakraborty, S., Mashreky, S. R., & Dalal, K. (2022). Violence against physicians and nurses: A systematic literature review. *Journal of Public Health, 30*(8), 1837–1855. <https://doi.org/10.1007/s10389-021-01689-6>
- Cheung, T., Mui, J., Ho, Y. S., & Chien, W. T. (2018). A scale for the management of aggressive and violent behaviour (C_MAVAS): Psychometric properties testing in mental health nurses. *International Journal of Environmental Research and Public Health, 15*(7), 1496. <https://doi.org/10.3390/ijerph15071496>
- Copeland, D., & Henry, M. (2017). Workplace violence and perceptions of safety among emergency department staff members: Experiences, expectations, tolerance, reporting, and recommendations. *Journal of Trauma Nursing, 24*(2), 65–77. <https://doi.org/10.1097/jtn.0000000000000269>
- Cotter, E., Eckardt, P., & Moylan, L. (2018). Instrument development and testing for selection of nursing preceptors. *Journal for Nurses in Professional Development, 34*(4), 185–193. <https://doi.org/10.1097/nnd.0000000000000464>
- Duxbury, J. (2002). An evaluation of staff and patient views of and strategies employed to manage inpatient aggression and violence on one mental health unit: A pluralistic design. *Journal of Psychiatric and Mental Health Nursing, 9*(3), 325–337. <https://doi.org/10.1046/j.1365-2850.2002.00497.x>
- Duxbury, J. (2003). Testing a new tool: The Management of Aggression and Violence Attitude Scale (MAVAS). *Nurse Researcher, 10*(4), 39–52. <https://doi.org/10.7748/nr2003.07.10.4.39.c5906>
- Heller, G. Z., Manuguerra, M., & Chow, R. (2016). How to analyze the Visual Analogue Scale: Myths, truths and clinical relevance. *Scandinavian Journal of Pain, 13*, 67–75. <https://doi.org/10.1016/j.sjpain.2016.06.012>
- Holland, K. M., Jones, C., Vivolo-Kantor, A. M., Idaikkadar, N., Zwald, M., Hoots, B., Yard, E., D'Inverno, A., Swedo, E., Chen, M. S., Petrosky, E., Board, A., Martinez, P., Stone, D. M., Law, R., Coletta, M. A., Adjemian, J., Thomas, C., Puddy, R. W., ... Houry, D. (2021). Trends in US emergency department visits for mental health, overdose, and violence outcomes before and during the COVID-19 pandemic. *JAMA Psychiatry, 78*(4), 372–379. <https://doi.org/10.1001/jamapsychiatry.2020.4402>
- Kyriazos, T. A. (2018). Applied psychometrics: Sample size and sample power considerations in factor analysis (EFA, CFA) and SEM in general. *Psychology, 9*(8), 2207–2230. <https://doi.org/10.4236/psych.2018.98126>
- McElligott, D., Eckardt, S., Montgomery Dossey, B., Luck, S., & Eckardt, P. (2018). Instrument Development of Integrative Health and Wellness Assessment™. *Journal of Holistic Nursing, 36*(4), 374–384. <https://doi.org/10.1177/0898010117747752>
- McGuire, S. S., Finley, J. L., Gazley, B. F., Mullan, A. F., & Clements, C. M. (2023). The team is not okay: Violence in emergency departments across disciplines in a health system. *The Western Journal of Emergency Medicine, 24*(2), 169–177. <https://doi.org/10.5811/westjem.2022.9.57497>
- McGuire, S. S., Mullan, A. F., & Clements, C. M. (2021). Unheard victims: Multidisciplinary incidence and reporting of violence in an emergency department. *The Western Journal of Emergency Medicine, 22*(3), 702–709. <https://doi.org/10.5811/westjem.2021.2.50046>
- Mento, C., Silvestri, M. C., Bruno, A., Muscatello, M. R. A., Cedro, C., Pandolfo, G., & Zoccali, R. A. (2020). Workplace violence against healthcare professionals: A systematic review. *Aggression and Violent Behavior, 51*, 101381. <https://doi.org/10.1016/j.avb.2020.101381>
- Messerly, J., & Marceaux, J. C. (2020). Examination of the reliability and validity of the NAB Naming Test in a diverse clinical sample. *The Clinical Neuropsychologist, 34*(2), 406–422. <https://doi.org/10.1080/13854046.2019.1635647>
- Mitra, B., Nikathil, S., Gocentas, R., Symons, E., O'Reilly, G., & Olausson, A. (2018). Security interventions for workplace violence in the emergency department. *Emergency Medicine Australasia, 30*(6), 802–807. <https://doi.org/10.1111/1742-6723.13093>
- Pulsford, D., Crumpton, A., Baker, A., Wilkins, T., Wright, K., & Duxbury, J. (2013). Aggression in a high secure hospital: Staff and patient attitudes. *Journal of Psychiatric and Mental Health Nursing, 20*(4), 296–304. <https://doi.org/10.1111/j.1365-2850.2012.01908.x>
- Richardson, S. K., Grainger, P. C., Ardagh, M. W., & Morrison, R. (2018). Violence and aggression in the emergency department is under-reported and under-appreciated. *The New Zealand Medical Journal, 131*(1476), 50–58.
- Roppolo, L. P., Morris, D. W., Khan, F., Downs, R., Metzger, J., Carder, T., Wong, A. H., & Wilson, M. P. (2020). Improving the management of acutely agitated patients in the emergency department through implementation of Project BETA (Best Practices in the Evaluation and Treatment of Agitation). *Journal of the American College of Emergency Physicians Open, 1*(5), 898–907. <https://doi.org/10.1002/emp2.12138>
- Sharpe, D. (2015). Your chi-square test is statistically significant: Now what? *Practical Assessment, Research, and Evaluation, 20*(8). <https://doi.org/10.7275/tbfa-x148>
- Soares, M. H., & de Vargas, D. (2013). The translation and cultural adaptation of the Management of Aggression and Violence Attitude Scale—MAVAS—for nurses in Brazil [In Portuguese]. *Revista da Escola de Enfermagem da USP, 47*(4), 899–906. <https://doi.org/10.1590/S0080-623420130000400018>
- Streiner, D. L. (2003). Being inconsistent about consistency: When coefficient alpha does and doesn't matter. *Journal of Personality Assessment, 80*(3), 217–222. https://doi.org/10.1207/s15327752jpa8003_01
- Streiner, D. L., & Kottner, J. (2014). Recommendations for reporting the results of studies of instrument and scale development and testing. *Journal of Advanced Nursing, 70*(9), 1970–1979. <https://doi.org/10.1111/jan.12402>
- von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., & Vandenbroucke, J. P.; STROBE Initiative. (2007). Strengthening the reporting of observational studies in epidemiology (STROBE) statement: Guidelines for reporting observational studies. *BMJ, 335*(7624), 806–808. <https://doi.org/10.1136/bmj.39335.541782.AD>

Walters, S. J., Stern, C., & Robertson-Malt, S. (2016). The measurement of collaboration within healthcare settings: A systematic review of measurement properties of instruments. *JBIR Database of Systematic Reviews and Implementation Reports*, 14(4), 138–197. <https://doi.org/10.11124/jbisrir-2016-2159>

Wong, W. K., & Chien, W. T. (2017). Psychometric properties of the Management of Aggression and Violence Attitude Scale in Hong Kong's emergency care setting. *International Emergency Nursing*, 31, 46–51. <https://doi.org/10.1016/j.ienj.2016.11.002>

For more than 115 additional nursing continuing professional development activities related to trauma topics, go to [NursingCenter.com/ce](https://www.nursingcenter.com/ce).



TEST INSTRUCTIONS

- Read the article. The test for this nursing continuing professional development (NCPD) activity is to be taken online at www.nursingcenter.com/ce/jtn.
- **NursingCenter.com/CE/JTN.** Tests can no longer be mailed or faxed.
- You'll need to create an account (it's free!) and log in to access My Planner before taking online tests. Your planner will keep track of all your Lippincott Professional Development online NCPD activities for you.
- There's only one correct answer for each question. A passing score for this test is 7 correct answers. If you pass, you can print your certificate of earned contact hours and access the answer key. If you fail, you have the option of taking the test again at no additional cost.
- For questions, contact Lippincott Professional Development: 1-800-787-8985.
- Registration deadline is September 5, 2025.

PROVIDER ACCREDITATION

Lippincott Professional Development will award 2.5 contact hours for this nursing continuing professional development activity.

Lippincott Professional Development is accredited as a provider of nursing continuing professional development by the American Nurses Credentialing Center's Commission on Accreditation.

This activity is also provider approved by the California Board of Registered Nursing, Provider Number CEP 11749 for 2.5 contact hours. Lippincott Professional Development is also an approved provider of continuing nursing education by the District of Columbia, Georgia, West Virginia, New Mexico, South Carolina, and Florida, CE Broker #50-1223. Your certificate is valid in all states.

Payment: The registration fee for this test is FREE for STN members and \$24.95 for nonmembers.

STN members can take JTN CE for free using the discount code available in the members-only section of the STN website. Use the discount code when payment is requested during the check-out process.

DOI: 10.1097/JTN.0000000000000758