

An instrument to measure violence

Un instrumento para medir violencia

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SUMMARY

There is an established association between mental illness and violent behaviour but no reliable and valid measure of violence. The author reviewed the literature and performed qualitative and quantitative research using forensic mental health staff and adult and adolescent members of the general public to develop the Violence Checklist (VCL). The 12-item instrument rates behaviours ranging from swearing to killing people. It was applied to a "violent" group of 48 and a "non-violent" group of 83. The VCL scores in the Violent group were significantly higher than the Control group for behaviours in the last week, last month, last year and lifetime, indicating adequate criterion validity. The VCL demonstrated excellent test-retest reliability, inter-rater reliability and reasonable internal consistency. The VCL is an instrument with demonstrated validity and reliability which will find clinical and research applications in general and forensic psychiatry, correctional and other populations, subject to replication of these findings.

KEY WORDS

Mental illness

Violent

Scale

Validity

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RESUMEN

Existe una asociación establecida entre enfermedad mental y violencia pero no una medida confiable y validada de violencia. El autor revisó la literatura y realizó una escala cualitativa y cuantitativa con el Grupo de Salud Mental Forense y miembros adolescentes y adultos del público en general para desarrollar la escala de la violencia (VCL). El instrumento de 12 ítems va desde jurar hasta matar una persona. Este fue aplicado a un grupo de 48 violentos y a un grupo de 83 no violentos. El score VCL en el grupo violento fue significativamente mayor que en el grupo control para el comportamiento en la última semana, último mes, último año y tiempo de vida, indicando un adecuado criterio de validación. El VCL demostró ser un excelente test-retest de confiabilidad y consistencia interna razonable. El VCL es un instrumento con validación y confiabilidad que encontrará aplicación en la clínica, en la investigación general y la psiquiatría forense, correccional y otras poblaciones de sujetos que permitan replicar estos hallazgos.

PALABRAS CLAVE

Enfermedad mental
Violencia
Escala
Validación

INTRODUCTION

Aggression generally refers to verbal or physical acts that are intended to cause harm. Aggression embraces instinctive, biological and learned factors. (1)

Violence has been variously defined as physical behaviours that result in harm to other people, (2) as any unjust or unwarranted exertion of force or power against rights, laws etc., (1) and elsewhere as "an unwanted physical contact, an unwanted

sexual act, or a threat that includes specific statements of intent to harm". (2) Clinically, practitioners see at least some similarity between aggression and violence, (3) those being that violence is often, if not always, the consequence of aggression. Thus there is some overlap between the two entities.

Threats alone (without physical or sexual assaults) may account for nearly half of all aggressive events in a mental health care setting, (4) but have often been excluded from definitions. (3) As a consequence, some threatening acts, which have caused harm, and could therefore be deemed to be violent, have been excluded from definitions of violence.

Violent behaviour is a diagnostic or associated feature of a number of DSM-IV defined mental disorders. (5) Violence to animals, despite being a diagnostic feature of some DSM-IV diagnostic categories, has been overlooked in previous definitions of violence.

Violence committed by individuals with severe mental illness living in the community has become a focus of concern among clinicians, policy makers and the general public. (6) A body of research now supports the idea that an association exists between mental illness and violence. (7) Two substantial cross-sectional USA community studies, (8-9) showed a significant quantitative association between schizophrenia and violence. Of course, an association does not necessarily mean there is a causal association.

The putative *causal* association between mental illness and violence, has major consequences for the mentally ill, and major implications for caregivers, communities and politicians. However, establishing such a connection has been fraught with difficulties. A review of 320 articles on mental illness and violence research revealed methodological flaws and threats to validity. (5) These included lack of control for confounding factors, major selection biases, information bias in the form

of broad, circular definitions of mental illness and violence and deficiencies in the temporal ordering of factors. Despite these shortcomings, the authors concluded that:

- The prevalence of mental illness among incarcerated populations is high.
- Ex-mental patients are at high risk of arrest and violence.
- Hospitalized mental patients are at high risk of committing violence, while in hospital.
- Family members are the most likely targets of violence from presently mentally ill or from ex-mental patients.

Defining and measuring violence is an important first step in further research in to the putative causal relationship between schizophrenia and violence. If a causal relationship is to be demonstrated between schizophrenia and violence, an accepted definition of schizophrenia is required and an acceptable measure of violence is also necessary. Therefore, the development of sophisticated instruments to detect and monitor violent behaviour (10) and typology of violent behaviour (11) has been encouraged and it is with that purpose that this research project was undertaken.

Much research into the relationship between mental illness and violence has relied upon official records such as conviction data and mental health records. Such methodology grossly underestimates levels of violence. Arrest and court records suffer from degradation of information due to selective enforcement, diversion from the criminal justice system and the effects of plea bargaining. (12) Conviction data are especially biased because charges are often reduced or dropped. "Overcharging" to allow a prosecutor leverage in plea-bargaining further distorts the issue. Numerous acts of violence (especially toward family members) may never be reported at all, because victims recognize the perpetrator has a mental illness.

The records of private practitioners are usually unavailable to researchers. Hospital incident report

records are often filed separately from patient files and much violence is not recorded. It is evident that no single source of information is thus adequate.

Existing measures of violence suffer from difficulties associated with comprehensiveness, reliability and untested validity. Many of the scales designed to measure rage, anger, and violence are self-report questionnaires of angry feelings, violent thoughts or reactions to anger provoking situations. Self-reports of violence present obvious difficulties, including the inherent distortion in recall, as well as the questionable truthfulness of reported illegal behaviours.

Patients whose cognitive abilities are impaired by psychosis or organic mental disease cannot reliably complete questionnaires. Many patients are not angry between aggressive episodes and do not reliably recall or admit to past violent events. (13)

An extensive effort to validate the most widely used self-report scale, the Buss-Durkee Hostility Inventory, a 75-item paper and pencil questionnaire, found no relationship between the scores on the inventory and observable aggressive or violent behaviour. (14) Interviewing friends and relations would provide a broader sampling of incidents. While the problem of distorted memory persists, the information is likely to be less sanitized.

The Nurses Observation Scale for Inpatient Evaluation (NOSIE) (15) and the Brief Psychiatric Rating Scale (BPRS) suffer from not being comprehensive. They have a few items that rate aggressiveness but do not differentiate mild aggressive behaviours from more severe ones.

The Overt Aggression Scale (OAS) is a behavioural checklist consisting of 16 items. (13) The intraclass correlation coefficients of reliability obtained in one study indicated good reliability for most items. (13) The OAS is easy to complete and reliable for rating aggressive events. Its limitations include lack of definition of categories, exclusion of certain forms

of aggression and the absence of a suitably weighted total score. (16)

The Modified Overt Aggression Scale (MOAS) (16) is a revision of the OAS with a 5-point rating system, definitions of aggression and extra behaviours. Its fundamental weakness is its arbitrary weighting scale. Its validity was tested in a study of two cohorts of inpatients. It failed to detect differences with respect to diagnosis or gender, however, which casts doubt on its usefulness, given the findings of larger community-based studies.

The OAS-M(17) assesses current levels of aggression and has excellent inter-rater reliability; its test-retest stability is consistent with its emphasis on assessment of state aggression sensitive to change during clinical trials. It is a semi-structured interview with a weighted frequency and severity score of verbal, indirect, direct and self directed aggressive events over the past week. Its weakness is the absence of historical markers of violence.

Among life history measures of aggression, two types of assessments have been reported in the published literature. One is the perceived Feelings and Acts of Violence. (18) It is a self-report questionnaire and has such suffers from the limitations inherent in all self-report measures. The Life History of Aggression (LHA) (19) aims to measure trait aggressive behaviour. All items in the LHA are rated on a five-point scale based on the total number of occurrences of the behaviour since age 13. Its limitations include lack of comprehensiveness and untested validity.

The MacArthur Risk Assessment Study (20) of violence in patients released from mental health facilities uses multiple measures of violence, including official arrest and mental hospital records, self-reports and collateral reports consolidated into an aggregate outcome measure. Verbal arguments, or verbal threats without a weapon being present, are not counted as incidents of violence. It is limited by not including important markers of violence such as cruelty to animals.

The Conflict Tactics Scale (CTS) contains 15 items that measure perception of verbal and physical violence. (21) It has a high level of internal consistency and has concurrent validity and content and construct validity in the measurement of certain types of intrafamily conflict but is not a comprehensive measure.

The HITS(22) is a four-item questionnaire that asks respondents how often their partner physically "Hurt, Insulted, Threatened with harm and Screamed" at them. The correlation of HITS and CTS scores was .85 but is also a situation-specific, rather than comprehensive measure.

The Violence Scale, a behavioural rating scale completed by a trained rater, includes a cumulative rating of all behaviours. Items measure the type and degree of both aggressive and violent behavior directed at others, self, and property, (2) but it also fails to include markers of violence such as cruelty to animals.

Evidence suggests a continuum of behaviours, with verbal aggression at one end and physical violence at the other. There is, in general, a failure to acknowledge the heterogeneity of violent behaviour. Patients have often been dichotomized simply into violent and nonviolent groups. (23) The scales reviewed above are those most commonly used by clinicians and researchers. All have deficiencies that indicate the need for a comprehensive, reliable and valid measure of violence that can be administered efficiently by mental health clinicians. A new measurement strategy that takes into consideration the single continuum of these behaviours and their cumulative nature is indicated. (2)

The most common approach to the development of a scale is to develop a system of discrete, nominal categories. Researchers have developed scales based on common-sense notions about what violence is more or less "serious". Systems with face validity have been used in numerous studies and offer some, albeit limited, information. A

conceptually sounder method is to gauge the severity of the act using public opinion. (12)

METHODS

The Violence Checklist (VCL) was developed in two phases. Firstly, qualitative research was conducted. The author searched the literature, using Medline, Psychlit and the database of the Calgary World Health Organization Collaborating Centre for Mental Health, in 1998. Key words employed in the literature search were violence, mental illness, aggression, scale and instrument. A list of violent behaviours was distilled and presented to individuals from 4 groups: psychiatric clinicians, non-clinical hospital staff, 12 and 13 year old students and a university ice hockey team. These disparate groups were not considered to be representative but offered a spread of community opinion. The subjects ranked the behaviours in order of severity and were asked for comments.

Behaviours were added to the list on the basis of comments. These behaviours included two forms of sexual assault and threats. Behaviours ranked equally were included in the same item. The behaviours were then allocated weightings of severity, from 1 to 100, by each individual.

In the second phase, conducted in Tasmania, Australia, in 1999, the validity and reliability of the instrument was tested. The instrument was applied to volunteers from a "violent" group and a "non-violent" control group. A rater provided spoken instructions and subjects completed the checklists, ticking a box in each of 4 time periods for the presence of the listed behaviour. The violent group included individuals who generally would be characterised as violent by community standards. This group comprised 33 men serving sentences at a prison farm, 8 men attending a violent men's group and 7 women prison inmates. The non-

violent controls included individuals who generally would be characterised as non-violent by community standards, comprising 43 members of a symphony orchestra, 8 mental health professionals and 39 schoolteachers. The control group of subjects was considered to contain individuals who would most likely to be considered non-violent by community standards.

Two raters applied the instrument simultaneously to a sample of 10 subjects to test inter-rater reliability and 10 subjects were retested, two weeks apart, to examine test-retest reliability.

Data Analysis

Unpaired t-tests were used to examine differences in mean scores between the violent and non-violent groups. An alpha value of 0,05 was used throughout the study. By inspection of the data, cutoff points were chosen and specificity and sensitivity ratios were calculated.

RESULTS

Sample Characteristics

Of the 48 subjects in the violent group, 41 were male, average age 34,6 years (SD 9,0) and 7 female, average age 39,5 years (SD 12,9). Of the 83 subjects in the Control group, 31 were male, average age 42,7 years (SD 10,8) and 43 female, average age 40,2 years (SD 10,8) and gender was not recorded for 9 subjects.

In the first phase of research, the four groups ranked the behaviours. The additional behaviours of "Threatening With A Weapon", "Sexual Assault (touching)" and "Sexual Assault (penetrating)" were added and included in the next phase of investigation and the median weighting allocated by the four groups were as follows (table 1):

Table No. 1
MEDIAN BEHAVIOUR WEIGHTINGS

Behaviour	Clinicians	Non Clinicians	Students	Hockey Players	TOTAL
Swearing or shouting	1	1	1	1	1
Sarcasm or name calling	2	2	2	2	2
Hitting objects	4	4	4	4	4
Damaging objects	5	5	5	5	5
Destroying objects	6	6	6	6	6
Hitting animals	10	10	10	10	10
Hitting people or injuring animals	15	15	15	15	15
Injuring people or killing animals	25	25	32.5	25	25
Threatening with a weapon	60	15	35	95	40
Sexual abuse (touching)	25	60	50	50	45
Sexual abuse (penetrating)	55	90	100	85	80
Killing people	100	100	100	100	100
Totals	308	333	360.5	398	333

There was remarkable consistency across the four rating groups. An interesting observation was that the student group rated violence against animals to be a more serious than violence against people, in contrast to the other three groups who rated violence against people to be more serious than violence against animals. The list of total median behaviour weightings became the Violence Checklist (Figure 1) which was then applied to the subjects.

The mean results obtained from testing of the two groups for violence occurring in the last week, last month, last year and lifetime are presented in Table 2. Behaviours were rated as present or absent.

The violent group had a significantly higher mean last week score (5,3) than the non-violent group (1,6), $t(DF\ 129)=1,984$, $p=0,049$. Violent men had a higher, but not significant, mean last week score (6) than non-violent men (2,5), $t(70)=1,077$, $p=0,029$ and women in both groups scored 1,1.

The violent group had a significantly higher mean last month score (10) than the non-violent group (2,5), $t(129)=3,145$, $p=0,0021$. Violent men had a higher, but not significant, mean last month score (11,2) than non-violent men (3,1), $t(70)=1,967$, $p=0,05$ and the violent women had a higher, but not significant, last month score (2,6) than non-violent women (2,1).

The violent group had a significantly higher mean last year score (35) than the non-violent (7,5), $t(129)=5,299$, $p<0,0001$. Violent men had a significantly higher mean last year score (36,8) than non-violent men (10,1), $t(70)=3,062$, $p<0,0031$ and violent women had a significantly higher mean last year score (24,1) than non-violent women (5,6), $t(48)=3,225$, $p<0,0023$.

The violent group had a significantly higher mean lifetime score (109,9) than the non-violent group (28), $t(129)=7,251$, $p<0,0001$. Violent men had a

Violence check list (VCL)© scoring sheet

FAMILY NAME	OTHER NAMES	DOB / /
STREET NO & NAME	NOK NAME & RELATIONSHIP	TEL:
CITY	PHYSICIAN:	TEL:
STATE & ZIPCODE	ATTORNEY:	TEL:
TEL:	INFORMANT:	TEL:

	BEHAVIOR	VALUE	In last week	In last month	In last year	In lifetime
1	Swearing or shouting	1				
2	Sarcasm or name-Calling	2				
3	Hitting objects	4				
4	Damaging objects	5				
5	Destroying objects	6				
6	Hitting animals	10				
7	Hitting people or injuring animals	15				
8	Injuring people or killing animals	25				
9	Threatening with a weapon	40				
10	Sexual assault (non-penetrating)	45				
11	Sexual assault (penetrating)	80				
12	Killing people	100				
Totals						

Rater's Signature

Name.....

Date //

**Table No. 2
MEAN SCORES FOR VIOLENCE**

Time Period	Violent Men n=41	Violent Women n=7	Violent (total) n=48	Non Violent Men n=31	Non Violent Women n=43	Non Violent (total) n=83
LAST WEEK	6	1,1	5,3*	2,5	1,1	1,6
LAST MONTH	11,2	2,6	10**	3,1	2,1	2,5
LAST YEAR	36,8**	24,1**	35***	10,1	5,6	7,5
LIFETIME	116,4***	72*	109,9***	32,2	25,9	28

no gender recorded for 9 subjects

* p< 0,05, ** p<0,005, *** p<0,0001

significantly higher mean lifetime score (116,4) than non-violent men (32,2), $t(70)=4,923$, $p<0,0001$ and violent women had a significantly higher mean lifetime score (72) than non-violent women (25,9), $t(48)=2,238$, $p=0,03$.

Violent men scored higher than violent women at all time periods and non-violent men scored higher than non-violent women at all time periods. However, the differences between non-violent men and non-violent women were not significant in the last week score $t(72)=1,529$, $p=0,13$, the last month score $t(72)=0,969$, $p=0,34$, last year score $t(72)=1,424$, $p=0,16$ or lifetime score $t(72)=0,612$, $p=0,54$. The differences between violent men and violent women were not significant in the last week score $t(46)=0,725$, $p=0,47$, last month score $t(46)=1,006$, $p=0,32$, last year score $t(46)=0,698$, $p=0,49$, or lifetime score $t(46)=1,246$, $p=0,22$.

Cutoff points were chosen after inspection of the data and specificity and sensitivity calculated as follows (sensitivity refers to the ability of a test to detect true positives and specificity refers to the detection of true negatives) (table 3):

Table No. 3
SENSITIVITY AND SPECIFICITY RATES

Time period	Cutoff	Sensitivity (%)	Specificity (%)
Week	3	14,6	92,8
Month	3	29,2	85,5
Year	15	56,3	90,4
Life	50	72,9	86,7

The best sensitivity (72,9) was found in the life-time ratings. Specificity was high in all groups.

(Fisher's test-retest correlations were calculated for the 7 violent men who were tested and presented again for retesting 2 weeks later (table 4):

Table No. 4
TEST-RETEST CORRELATIONS

Time period	Sensitivity	Specificity
Week	0,937	0,0006
Month	0,559	0,21
Year	0,970	<0,0001
Life	0,944	0,0004

The poor correlation in the last month (0,559) represents an artefact whereby behaviours reported in the last month have changed in the 2 weeks between testing.

Internal consistency refers to how closely scores on the 12 different items in each time period relate to each other. Cronbach's alpha scores for each time period were (table 5):

Table No. 5
INTERNAL CONSISTENCY SCORES

Time period	Cronbach's Alpha
Week	0,68
Month	0,69
Year	0,79
Life	0,82

Ratings for internal consistency were similar across all time periods (0,68 – 0,82).

Ten violent men were tested simultaneously by 2 raters, blind to each other's scores. Identical scores (ie perfect inter-rater correlation of 1) were recorded by the 2 raters.

CONCLUSIONS

Violence occurs on a continuum. A dimensional construct of violence is therefore the preferred manner in which to consider the overt presentation of aggression. The results of this study confirm that

"non-violent" people can, and do, commit violent acts. Categorizing individuals as violent or non-violent is a fairly meaningless exercise. It is more useful to consider people to be more, or less, violent than their peers.

If the degree of violent behaviours can be measured in a quantifiable way, then, behaviour can be described as more, or less, violent. It also becomes possible to quantify violent behaviour so that an individual's progress may be tracked over time and compared to others. The instrument developed and tested in this study measures violence on a scale of 0 – 333. It is possible to use it to measure violence over different time periods. The periods chosen in this study varied from one week to life-time. Thus, it is possible to compare an individual's dynamic status by comparing, say, last week, month and year scores separated by intervals. Life-time ratings can be used to compare individuals.

There are several methods of collecting information about violence: first-hand witnessing, self-report, collateral interviews, police and court records, treatment files and hospital incident reports. However, no single source of information is adequate. This study was limited by the small number of subjects who were tested twice and also by the small number of women in the violent group. Furthermore, the study only utilized self-report, with its limitations as noted above. It was considered that the effects of under-reporting of violent behaviours most likely "cancelled-out" between the violent and control groups, although that may not be the case, as the majority of subjects in the violent group were incarcerated. This may explain why the sensitivity was so poor for week/month time periods. Any tendency of that group to under-report violence would have blurred the difference between the two groups. It may be, however, be explained by violence being sporadic and "violent" individuals actually being "non-violent" most of the time.

A more accurate report would possibly serve to increase the significance of differences between the control and violent groups. In the instructions for

use of the VCL it is recommended that *"Multiple sources of information should be utilized to arrive at a score. Suggested sources of information include, but are not limited to, self-report, family and carers, treating health professionals and official documents such as patient files, hospital incident report forms, police charge sheets, court records and prison files. Where there is a discrepancy between self-report and another source of information, it is recommended that the higher score be rated."*

Nevertheless, certain conclusions can be drawn with confidence. Even using self-report data, it is possible to demonstrate differences in the rates of violent behaviours within and between individuals using the VCL. The VCL detects a change in violent behaviours over time, identifying different levels of violent behaviour in the same individual at different points in time. It also quantifies differences in violent behaviours between individuals. Violent men are no more violent than violent women. Similarly, non-violent men are no more violent than non-violent women.

The most significant advance that the VCL offers over previous measures of violence is that has been demonstrated in this study to be a valid measure of violence, showing a significantly different score between violent and non-violent groups at each time interval. Reliability, including inter-rater, test-retest and internal consistency, was satisfactory at one week and one month and very good at one year and lifetime periods. It is easy and quick to administer as a self-report measure but is readily able to be used when collateral information is available. Minimal training is required and the data is condensed to a single figure for each time period. That has the effect of making it easy for non-trained personnel to understand the information it represents.

The instrument was developed using data derived from members of the general public and from clinicians. In this study it was applied to members of the general public and to known convicted criminals. Neither group was screened for mental

illness. Although it is likely that some mentally disordered individuals were tested, no conclusions can be drawn from the current data about the instrument's acceptability for use in mentally disordered subjects. The author has, however, presented findings from a mentally disordered group to a scientific meeting, (24) indicating good acceptability by patients in a general psychiatric setting.

A comprehensive study of the levels and types of violence in samples of non-mentally disordered individuals matched with samples of individuals with mental illness has not yet been done. (7) Most studies on aggression have been retrospective and have not provided a basis for drawing etiologic conclusions. More prospective studies of violence among mentally ill persons and demographically matched controls from the same community who are not mentally ill are needed. (7-11) Ideally, subjects need to be followed prospectively over a considerable period using the same instruments. (10) Use of cohort designs in order to establish the proper ordering of factors and to provide evidence that mental illness predates violence is required. (5) The MacArthur Violence Risk Assessment Study has gone a fair way to address some of these issues. (25)

Future studies of violent behavior in schizophrenia should be prospective. The dependent variable (violence) should be carefully defined and information should be collected repeatedly from multiple sources including self-reports, families, service providers, law enforcement and criminal justice bodies. (10) The VCL may be a suitable instrument for use in such studies.

With the strong trend toward short-term hospital stay and community-based care for the seriously mentally ill, it is important to know as precisely as possible the risks that those with specific psychiatric disorders and personal characteristics may or may not pose to others. (8)

The presence of violent behaviours should be assessed in all psychiatric evaluations and

monitored if present. (10) A quantifiable measure such as the VCL may be easily incorporated into the routine of a psychiatric evaluation.

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