The attempted and actual assault scale (attacks)

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Abstract

The Attempted and Actual Assault Scale (Attacks) was designed to record the nature and severity of inpatient assaults. To explore the psychometric properties of the Scale, a videotape of interpersonal assaults was compiled with clips from regular television broadcasts. During a meeting of the European Violence in Psychiatry Research Group (EVIPRG), 22 members from 14 different countries were instructed to rate the videotaped assaults on both the MOAS and the Attacks. Inter-rater reliability – in terms of intra-class correlation coefficients – was 0.70 for Attacks and 0.48 for MOAS severity scores. Attacks severity scores turned out to be significantly associated with the judgments of the raters about the severity of the observed assaults (Spearman's $\rho = 0.70$). It is concluded that the psychometric properties of the newly developed Attacks are promising. Copyright © 2007 John Wiley & Sons, Ltd.

Key words: aggression, assessment, psychiatric inpatients, violence

Introduction

Comparison of aggression frequencies between different wards and hospitals has been handicapped by a failure to uniformly express incidents rates (Bowers, 1999, 2000). The most widely used aggression observation scales today are the Modified version of the Overt Aggression Scale (MOAS of Kay et al., 1988; also see Yudofsky et al., 1986), the Staff Observation Aggression Scale (SOAS; Palmstierna and Wistedt, 1987), and its revised version (SOAS-R; Nijman et al., 1999, 2005). These widely used aggression observation tools are based on broad definitions of aggressive behaviour. Both MOAS and SOAS-R measure verbal aggression, aggression against objects, self-harming behaviour, and interpersonal assaults. This makes these instruments time-efficient, but also rather global measures in cases of interpersonal violence.

In order to train staff how to manage assaults in a way that prevents injuries, more detailed insight into the exact nature of physical violent acts of psychiatric inpatients is needed. In one of our exploratory studies on the nature of interpersonal assaults, for instance, it was found that only 6% of inpatient assaults involved grabs and holds of some sort (Bowers et al., 2002). A significant part of the time in most staff training, however, is devoted to breakaway techniques (Lee et al., 2001).

In the currently used aggression observation scales the calculation of the severity of aggressive occurrences is largely based on the outcome of incidents (i.e. incidents that do not cause injury will not get high severity scores). Although the expression of the severity of incidents in terms of their consequences is valid to a certain extent (Nijman et al., 1999, 2002), actual outcome of

violence also reflects staff efficacy in intervening in a way that prevents injuries. To give an extreme example: a patient who is highly committed to stab a fellow patient repeatedly with a knife, but who is disarmed by a nurse before doing so, will score 8 out of 16 potential points at most on the MOAS physical aggression sub-scale. The *commitment to harm* as well as the *injury potential* of this assault, however, were very high. For this reason, it is likely that most people would judge this incident to be severe, although nobody got physically hurt.

To gain more insight into the specific nature of assaults, and to also introduce *commitment to harm* and *injury potential* into the assessment of severity of witnessed assaults, a new scale was developed, which was called the *Attempted and Actual Assault Scale* (Attacks in short). In the present study, the proposed instrument and its severity scoring system are presented and tested.

Methods

Procedure

Clips of assaults were recorded from regular television broadcasts over a number of months. During a meeting of the European Violence in Psychiatry Research Group (EVIPRG), 22 group members from 14 different countries were then instructed how to complete the Attacks as well as the MOAS, and the use of both scales were practiced with two videotaped assaults.

Ten additional videotaped assaults were rated on both the Attacks and the MOAS by the participants. The order of completion of Attacks and MOAS was alternated between video clips. Each time the participants had scored both Attacks and MOAS (or *visa versa*), they also judged the overall severity of the assault on a Visual Analogue Scale (VAS). Later, the used instruments (Attacks, MOAS, and VAS) are addressed in more detail.

Measures

Attacks

The Attacks seeks to measure interpersonal physical violence in detail. In the appendices, the Attacks scoring form and the proposed severity scoring formula are presented. The Attacks is to be completed by nurses, directly after a violent incident has taken place on their ward. In the central table of the scale (see Appendix

1), all physically violent actions that have been witnessed during an (attempted) assault are to be recorded. More specifically, all weapons used (e.g. sharp objects, hot liquids, spitting, poking, etc.) are to be noted down *in combination with* the targets aimed at (e.g. head, limbs, torso, etc.).

As can be seen in the severity scoring formula in Appendix 2, it is the *combination* of the chosen weapon(s), target areas, and whether one or multiple blows or strikes are used, that determines overall severity of an assault. The severity scores of weapons and targets were assigned beforehand by the primary author, on the basis of face validity. The rater is also asked to judge the commitment of the assailant to cause harm, and to provide an estimate of the overall injury potential of the assault on visual Analogue Scales (see Appendix 1). In calculating overall severity of assaults, the VAS scores, as measured in centimetres from the left anchor point, are added to the score that consist from the combination of weapon(s) used, target(s) aimed at, and the amount of strikes (see formula in Appendix 2).

MOAS

The MOAS is an aggression observation instrument that divides aggression into four main categories, namely 'verbal aggression', 'aggression against property', 'autoaggression', and 'physical aggression' (Kay et al., 1988). Each of these four types of aggression are specified in five subcategories that reflect the severity of the behaviour (severity scores ranging from 0 to 4 points for each category). In order to calculate the overall severity of an incident, 'aggression against property' scores are multiplied by a factor 2, 'autoaggression' scores by a factor 3, and 'physical aggression' scores by a factor of 4, and then added to the 'verbal aggression' score. In other words, the scores of the categories are weighted in a way that the 'physical aggression' score is most important in calculating overall severity. In this way, total MOAS severity scores can theoretically range from 0 (no aggression) to 40 (most severe aggression). The inter-rater reliability of MOAS based on the total severity scores of two independent raters has been found to be good (Pearson's *r* values of 0.85 and 0.94; see Kay et al., 1988).

VAS severity

To assess judgments of participants about the severity of each of the viewed incidents, a horizontal VAS scale

of 10 centimetres was used. On this VAS measure, which was identical to the one used in two earlier SOAS-R validation studies (Nijman et al., 1999, 2002), the subjects marked the severity of the assaults ranging from 'not severe at all' (left or 0-centimetre end of the VAS) to 'extremely severe' (right or 10-centimetre end of the VAS).

Statistical analyses

Attacks and MOAS severity scores were calculated by the researchers on the basis of the completed forms. Nineteen of the 22 participants had completed all scales and subscales for each of the 10 incidents. Inter-rater reliability of Attacks and MOAS scores was assessed with the intra-class correlation coefficient (two-way random, single measure, consistency model) on the basis of the scores provided by these 19 raters.

To explore the relationship of the severity scores of both instruments, Spearman's ρ correlations between Attacks severity, MOAS severity, and general estimates of severity (VAS) were calculated. In these calculations all relevant pairs of observations were included, potentially giving a total n of 220 pairs (22 raters $\times$ 10 videotaped assaults).

Results

Mean MOAS severity was 12.0 (standard deviation (SD) = 4.3; n = 220). The average Attacks total score was 29.1 (SD = 19.1, n = 206).

On average, the commitment to harm and injury potential VAS scales of the Attacks scored 6.8 and 4.6 centimeters, respectively. Thus, the mean Attacks score of 29.1 consists for about 60% of the combination of weapons, targets, and intensity scores, and about 40% is made up of the two added VAS scale scores.

Although commitment to harm and injury potential were significantly associated with each other, the correlation was modest (Spearman's ρ = 0.25), suggesting that commitment to harm and injury potential are – at least to a certain extent – independent aspects of assaultive behaviour.

Inter-rater reliability of Attacks and MOAS severity scores

The intra-class correlation coefficient of the Attacks severity scores was 0.70. For the MOAS this coefficient was 0.48.

When the separate components of the Attacks were compared, it became clear that observed assaultive behaviour, as recorded in the central table had an acceptable degree of reliability (i.e. intra-class correlation coefficients of total weapon scores = 0.61; total target scores = 0.70; total intensity scores = 0.66), whereas the more subjective VAS measurements had weaker inter-rater reliability (Commitment to harm VAS = 0.31; and Injury potential VAS = 0.41).

Concurrent validity with overall judgments of severity of the assaults

Both Attacks and MOAS scores were significantly associated with overall judgments of aggression severity as provided on the severity VAS (Spearman's ρ values of 0.70 and 0.60, respectively). Separate analyses revealed that all the separate components of the Attacks severity scoring system were associated with the overall judgment of severity of the assaults (i.e. Spearman's ρ correlation with total weapon scores = 0.53; with total target scores = 0.45; total intensity scores = 0.53; with Commitment to harm VAS = 0.50; and Injury potential VAS = 0.73).

Discussion

The inter-rater reliability and concurrent validity of the newly developed Attacks appear to be promising. Due to a number of limitations to our study design, however, these results need to be interpreted with caution. Firstly, and most importantly, all incidents concerned interpersonal physical violence. While the Attacks was specifically designed for rating this type of behaviour, the MOAS was not. In other words, the MOAS was not used for the purpose it was made, namely measuring aggression from light to very severe forms. Indeed, inter-rater reliability of the MOAS has been found to be good (Kay et al., 1988) when used to score all forms of aggression in clinical practice.

Secondly, watching taped excerpts of acted violence from television dramas may not resemble experiencing real life inpatient assaults. Witnesses of, or participants in, violent incidents are likely to be emotionally aroused, concentrating their attention on minimizing untoward outcomes. Observation (and subsequent recording) of assaultive techniques used by assailants might, *in vivo*, be less accurate. A related point of concern is that our taped incidents were all acted. Therefore, they may

bear only a dramatic and artistic resemblance to genuine incidents that occur on psychiatric wards. The use of video records of real incidents would have been preferable; however obtaining such records has practical and ethical difficulties. Practical, in that lengthy periods of recording would be required to capture enough incidents of differing severity. Ethical in that it would be difficult to obtain informed consent in advance from disturbed psychiatric patients. Notwithstanding these difficulties, Crowner et al. (1994) did obtain ethical permission for a study of violent incidents in which cameras were installed in the four corners of a ward day room.

With these points of critique in mind, the results of the study indicate that the Attacks scale may be a useful addition to the scales already available for aggression research. Because the scale measures severe physical violence in detail, it may be particularly useful in forensic psychiatric settings, compulsory drug detoxification units, prisons, etc., where violent acts may be relatively severe.

If further research would confirm that the Attacks is a suitable instrument for assigning severity scores to assaults, this may perhaps also serve legal purposes. For instance, decisions on the penalization of certain acts could benefit from reliable and valid categorization of the severity of violent incidents. Especially, when violent acts are taped (e.g. in cases of assaults of football hooligans, violent crimes committed near cash dispensers, etc.), the scale could be used to take the used weapons, body parts aimed at, number of strikes, injury potential, etc. into account, in order to arrive at a more standardized judgment of the severity of performed violent crimes.

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Appendix 1

4. THE INCIDENT: Tick all that apply, whether used against the primary victim or not. Further definitions available on the back.											
4.1 Warning: Was any warning given by the patient?											
Clear verbal threat ☐					Threatening gestures ☐						
Verbal abuse/anger ☐					None ☐						
4.2 The attempted or actual assault:											
		Targets						Intensity			
		Hair	Limbs	Torso	Genitals	Head/Neck	Whole body	Once	Twice	Three times	Four or more
Body weapons	Spitting										
	Biting										
	Spitting (known infected)										
	Biting (known infected)										
	Blood (known infected)										
	Slapping (open hand)										
	Poking (fingers)										
	Scratching (fingers)										
	Hit (fist/elbow)										
	Kick (knee/foot)										
	Head										
Weapons	Light object thrown										
	Strike with light object										
	Heavy object thrown										
	Strike with heavy object										
	Cut/slash with sharp object										
	Stab with sharp object										
	Burn with cigarette										
	Hot liquids thrown										
	Fire/flames/burning object/liquid										
	Firearm										
Grabs & Holds	Immobilising hold										
	Distorting body to damage/pain										
	Strangling										
Throws & Pushes	Pushed away										
	Thrown to ground										
	Thrown/pushed onto object										
	Hit against object (e.g. wall)										
4.3 With what degree of commitment did the patient attack (please mark with an 'x' on the line below)?											
<div style="display: flex; justify-content: space-between; align-items: center;"> Zero ● ————— ● Total </div>											
4.4 In your view, what was the potential injury which MAY have been or WAS caused by the attack (please mark with an 'x' on the line below)?											
<div style="display: flex; justify-content: space-between; align-items: center;"> No injury ● ————— ● Serious </div>											

Appendix 2

Weaponscores

Spitting (1), biting (1), slapping (1), poking (1), scratching (1), pushed away (1), spitting; known infected (2), biting; known infected (2), blood, known infected (2), thrown to ground (2), burn with cigarette (2), immobilizing hold (2), distorting body to damage/pain (2), hitting (3), kicking (3), head (3), thrown/pushed onto object (3), light object thrown (3), strike with light object (3), heavy object thrown (3), strike with heavy object (3), hot liquids thrown (3), hit against object (4), cut/slash with sharp object (4), fire/flames (4), stab with sharp object (5), strangling (5), firearm (6)

Targetscores

Hair (1), limbs (2), torso (3), genitals (4), head/neck (5)
whole body (2,5)

Intensity scores (amount of strikes, hits, etc.)

Once (1), two or more times (2)

Commitment and injury potential

Number of centimetres as measured from the left anchor point of the VAS's

Attacks severity formula

Severity of the assault = ((weaponscore + targetscore) × intensity) + (Commitment to harm VAS + Injury potential VAS)

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