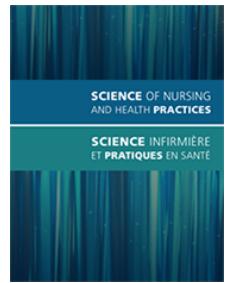


# Science of Nursing and Health Practices

## Science infirmière et pratiques en santé



# Violence Prevention Climate Scale: Translation, Adaptation, and Psychometric Assessment of the French Canadian Version

## L'Échelle du climat de prévention de la violence : traduction, adaptation et évaluation psychométrique de la version canadienne-française

Marie-Hélène Goulet, Michèle Desmarais, Pierre Pariseau-Legault, Caroline Larue, Francelyne Jean-Baptiste, Jean-Sébastien Turcotte et Anne G. Crocker

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### Résumé de l'article

**Introduction :** La violence en milieu psychiatrique entraîne des conséquences néfastes pour les patients, les intervenants et les organisations. Pourtant, les efforts pour la prévenir ne peuvent être évalués faute d'indicateurs adéquats. Le Violence Prevention Climate Scale (VPC-14), complété par les intervenants et les patients, est un outil validé qui évalue le climat de prévention de violence.

**Objectif :** Cette étude vise à traduire et adapter le VPC-14 au contexte québécois et à en vérifier la fiabilité et la validité en psychiatrie générale et légale.

**Méthodes :** En se basant sur la méthode de validation transculturelle d'instruments de mesure, les propriétés psychométriques ont été évaluées auprès de 308 patients et intervenants de 4 hôpitaux et instituts de santé mentale et médico-légale québécois. La validité de construit a été examinée par une analyse factorielle exploratoire et la cohérence interne par l'analyse du coefficient alpha de Cronbach. Résultats : L'Échelle modifiée du climat de prévention de la violence (VPC-M-FR) comprend 23 énoncés avec une structure à 3 facteurs : 1) les actions des intervenants, 2) les actions des patients et 3) l'environnement thérapeutique. Des coefficients alpha de Cronbach variant de 0,69 à 0,89 ont été obtenus pour la consistance interne de l'échelle. Discussion et conclusion : Le VPC-M-FR possède des propriétés psychométriques satisfaisantes pour mesurer le climat de prévention de la violence en milieu de santé mentale et médico-légal. En tenant compte de la perspective des intervenants et des patients, des interventions ciblées de prévention pourront être mises en œuvre afin d'améliorer la sécurité de tous.



Article de recherche empirique | Empirical research article

## **Violence Prevention Climate Scale: Translation, Adaptation, and Psychometric Assessment of the French Canadian Version**

### **L'Échelle du climat de prévention de la violence : traduction, adaptation et évaluation psychométrique de la version canadienne-française**

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Keywords	Abstract
scale development and validation; violence prevention climate; ward atmosphere; mental health; forensic	<p><b>Introduction:</b> Violence in psychiatric settings has negative consequences on patients, staff, and the institution alike. Efforts to prevent violence cannot currently be assessed due to a lack of suitable indicators. The Violence Prevention Climate Scale (VPC-14) is a validated tool that can be filled out by both staff and patients to assess the violence prevention climate in mental health care units. <b>Objective:</b> This study aimed to conduct the translation and adaptation of the VPC-14 to a French Canadian context, and to assess its psychometric properties in general and forensic psychiatric settings. <b>Methods:</b> This study followed a transcultural approach for validating measuring instruments. Psychometric properties were assessed in 308 patients and staff from 4 mental health and forensic hospitals in Quebec (Canada). Content validity was assessed using a bilingual participant approach. Internal validity was examined through exploratory factor analysis and internal consistency for each care setting using Cronbach's alpha coefficient analysis. <b>Results:</b> The <i>Échelle modifiée du climat de prévention de la violence</i> [Modified Violence Prevention Climate Scale] (VPC-M-FR) consists of 23 items with a 3-factor structure: 1) staff action, 2) patient action, and 3) the therapeutic environment. Cronbach's alphas ranging from 0.69 to 0.89 were obtained for the internal consistency of the scale. <b>Discussion and conclusion:</b> The VPC-M-FR has satisfactory psychometric properties for measuring the violence prevention climate in mental health and forensic settings. By measuring the violence prevention climate from the standpoint of patients and staff, targeted preventive measures can be implemented to improve safety for all.</p>

**Introduction :** La violence en milieu psychiatrique entraîne des conséquences néfastes pour les patients, les intervenants et les organisations. Pourtant, les efforts pour la prévenir ne peuvent être évalués faute d'indicateurs adéquats. Le *Violence Prevention Climate Scale* (VPC-14), complété par les intervenants et les patients, est un outil validé qui évalue le climat de prévention de violence. **Objectif :** Cette étude vise à traduire et adapter le VPC-14 au contexte québécois et à en vérifier la fiabilité et la validité en psychiatrie générale et légale. **Méthodes :** En se basant sur la méthode de validation transculturelle d'instruments de mesure, les propriétés psychométriques ont été évaluées auprès de 308 patients et intervenants de 4 hôpitaux et instituts de santé mentale et médico-légale québécois. La validité de construit a été examinée par une analyse factorielle exploratoire et la cohérence interne par l'analyse du coefficient alpha de Cronbach. **Résultats :** L'Échelle modifiée du climat de prévention de la violence (VPC-M-FR) comprend 23 énoncés avec une structure à 3 facteurs : 1) les actions des intervenants, 2) les actions des patients et 3) l'environnement thérapeutique. Des coefficients alpha de Cronbach variant de 0,69 à 0,89 ont été obtenus pour la consistance interne de l'échelle. **Discussion et conclusion :** Le VPC-M-FR possède des propriétés psychométriques satisfaisantes pour mesurer le climat de prévention de la violence en milieu de santé mentale et médico-légal. En tenant compte de la perspective des intervenants et des patients, des interventions ciblées de prévention pourront être mises en œuvre afin d'améliorer la sécurité de tous.

## Résumé

## Mots-clés

développement et validation d'échelle; climat de prévention de la violence; climat social de l'unité; santé mentale; psychiatrie légale

## INTRODUCTION

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### VIOLENCE

A meta-analysis of 42 studies representing 29,303 patients in psychiatric settings showed that one in five patients commits a violent act during their hospitalization (di Giacomo et al., 2020). The World Health Organization (WHO) defines violence in a mental health context as “the intentional use of physical force or power – threatened or actual – which either results in or has a high likelihood of resulting in injury, death, psychological harm or deprivation” (WHO; 2019, p. 16).

The most frequently described patient consequences are injuries, slower recovery, exacerbated post-traumatic symptoms, and being subjected to restrictive practices (Renwick et al., 2016; van Leeuwen & Harte, 2017). A systematic review of violence in the healthcare workplace generated a classification of staff consequences in seven categories: physical, psychological, emotional, social, financial, ability to work, and patient relations (Lanctôt & Guay, 2014). For example, one American study found that 55% of nurses working in psychiatric settings were exposed to physical violence (Spector et al., 2014). It is challenging for the staff, for nurses in particular who must both prevent and manage violent behavior while being the target of such behavior (Hallett et al., 2014). The direct economic costs of inpatient agitation in psychiatric settings represent 6.87% of the total cost of acute hospitalizations (Serrano-Blanco et al., 2017).

Although the majority of people suffering from mental health disorders will never exhibit violent behavior, inpatients are at greater risk of doing so, in part because many are admitted for such behavior which in turn is a predictor of its recurrence (Dack et al., 2013). A meta-analysis of the individual risk factors also found that they involved being young, male, admitted involuntarily, single, diagnosed with schizophrenia or substance abuse, and repeatedly admitted (Dack et al.). Conversely, it appears that violent behavior cannot be explained solely by individual-risk factors, since in an inpatient context, these factors are part of a much more complex ecosystem in which factors relating to the staff and

the care setting may play a determining role in the occurrence of violent behavior (Asikainen et al., 2020).

### VIOLENCE PREVENTION

To ensure the physical and psychological safety of patients and staff alike, several measures have been developed to prevent violence in psychiatric settings. Violence prevention is defined by the WHO (2019) as being a means of stopping interpersonal violence by reducing the underlying risk factors and reinforcing protective factors or by reducing the recurrence and negative effects of these risk factors. The approach to preventing trauma and violence proposes that staff can intervene at the three levels of prevention: primary, secondary, and tertiary. In mental health settings, primary prevention refers to actions to avoid violent occurrences (such as staff and patient training, risk assessment, joint crisis plans, meaningful activities, and staff-patient communication). Secondary prevention consists of actions undertaken to halt imminent violence (for example, detecting early signs of aggressive escalation, de-escalation techniques, or medication). Lastly, tertiary prevention requires that action is taken to mitigate the damage and prevent recurrence following a violent occurrence (such as restrictive practices and feedback about the incident from the patient and the team). Although institutions put a great deal of effort into preventing violence, aggression, and the use of coercion such as seclusion and restraint, these efforts are difficult to assess since no valid instruments to measure violence prevention based on primary, secondary and tertiary prevention existed until now.

What is generally measured with violence prevention tools? The instruments identified in relation to violence prevention usually focus on one specific dimension of violence or aggression in psychiatric settings.

For example, some tools such as the Overt Aggression Scale (De Benedictis et al., 2012; Yudofsky et al., 1986) or the Perception Of Prevalence Aggression Scale (POPAS; Geoffrion et al., 2017; Nijman et al., 2005) aim to measure the frequency of aggressive behavior as perceived by the staff. Some tools, such as the Perception of

Aggression Scale (POAS; De Benedictis et al., 2012; Jansen et al., 1997), focus staff attitudes towards patient aggressive or violent behavior. Other tools are specifically developed to assist the staff in making clinical decisions when assessing risk, such as the Brøset Violence Checklist (Almvik et al., 2000), the Short-Term Assessment of Risk and Treatability (Crocker et al., 2007; Webster et al., 2004), the Dynamic Appraisal of Situational Aggression (DASA; Dumais et al., 2012; Ogloff & Daffern, 2006) or the Historical, Clinical, and Risk Management (Douglas et al., 2014). However, these tools target specific risk factors relating to the people being treated and which do not take account of the action taken to prevent violence or the risk factors relating to the surrounding environment.

Since the occurrence of violent behavior is multifactorial and dynamic, it must be addressed through a multifactorial approach. Violence prevention is a phenomenon that is difficult to objectively assess, with some authors proposing to address it through the health care unit climate (Hallett et al., 2018; Moos, 1996; Schalast et al., 2008). The climate in a care unit offers an overall perspective that allows considering the interaction between its material, social, and emotional aspects. This, over time, can influence the mood, behavior, and self-perception of the people on that unit (Moos). Specter et al. (2007) proposed viewing the violence climate as one dimension of the overall climate in the unit. They developed the Perceived Violence Climate Scale which is based on the measurement of the safety climate. However, it is not specific to a psychiatric context. Moreover, it defines the perceived violence climate by its opposing concept, the safety climate.

In general, these tools target a specific dimension associated with violence, without incorporating patient perception or violence prevention interventions. All in all, there are tools that can, by inference, provide insight into the violence prevention climate by measuring, for example, how aggressiveness is perceived or the frequency of aggression in a unit, the indicators relating to patient risk, or to the quality of the psychosocial environment of a psychiatric care unit. However, these tools are not specific to the measurement of the violence prevention climate,

and few consider both the staff and patient perspectives.

## VIOLENCE PREVENTION CLIMATE

Recently developed in the United Kingdom, the Violence Prevention Climate Scale (VPC-14) is a validated self-report questionnaire for patients and staff that measures the violence prevention climate in psychiatric care units (Hallett et al., 2018). The VPC-14 is the only validated tool that aims to assess the violence prevention climate in care units that integrates both patient and staff perspectives. It was developed from: 1) a systematic violence prevention review (Hallett et al., 2014); 2) focus groups with patients and staff (Hallett et al., 2018); and 3) previous scales, i.e., the Ward Atmosphere Scale (Moos, 1996) and the EssenCES Scale (Schalast et al., 2008).

## OBJECTIVE

Since the VPC-14 had never been translated into French or validated in a variety of settings, including forensic psychiatry, the purpose of this study was therefore to translate and adapt the Violence Prevention Climate Scale and to assess its psychometric properties in general and forensic psychiatric settings in Quebec, Canada.

## METHODS

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### TRANSLATION FRAMEWORK

The transcultural validation of instruments was used to adapt the VPC-14 to the context in Quebec (see Figure 1) (Vallerand, 1989).

### SAMPLE AND SETTINGS

The study was conducted among 308 patients and staff from four mental health and forensic hospitals in a metropolitan region of the province of Quebec (see Table 1). Emergency psychiatric care, acute psychiatric care, psychiatric rehabilitation, and intensive psychiatric care units were approached to validate the tool in a variety of mental health and forensic settings. Pediatric and geriatric psychiatry units were excluded as the original version has not been validated for these age groups.

Two participant groups were enrolled through convenience sampling from June 2019 to February 2020, namely inpatients in a psychiatric or forensic care unit and the staff working in these units. The following inclusion criteria were applied for these participants: 1) be 18 years old or older, 2) speak French, and 3) be currently inpatients in a psychiatric or forensic unit. All unit care staff with at least two weeks' experience in the setting were included.

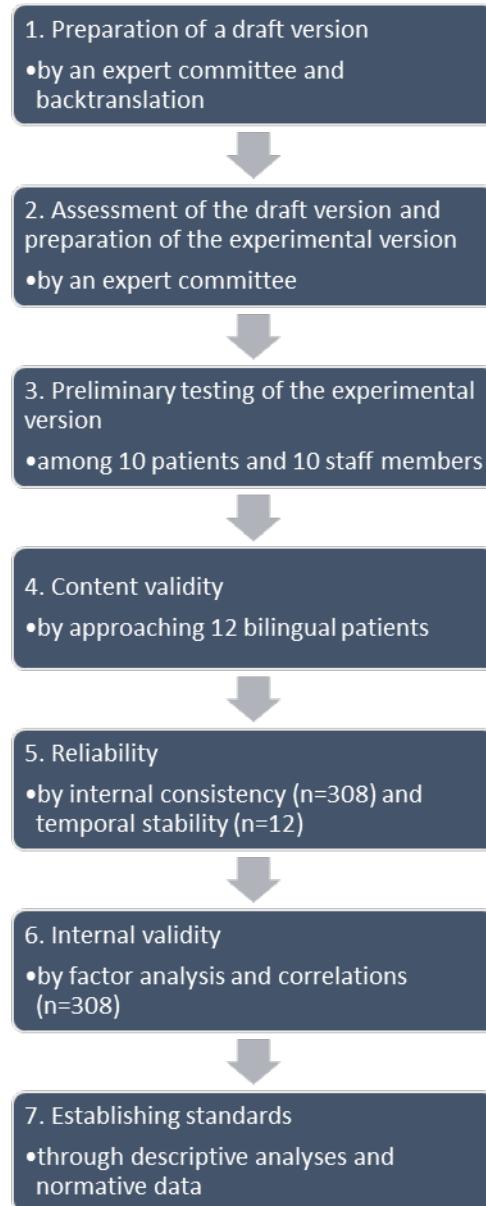
According to methodological recommendations for this type of design, 5 to 10

participants per item were required to conduct a factor analysis (Geisinger et al., 2013; Tinsley & Tinsley, 1987). As the scale had 39 items at the end of step 2 (see Steps in the Study and Analysis), a sample of 195 to 390 participants was therefore required to validate this scale.

Recruitment was carried out in collaboration with the nursing and mental health departments at each participating hospital. After signing the study consent form, each participant was asked to fill out the paper questionnaire (sociodemographic and Violence Prevention Climate sections - 39 items).

**Figure 1**

*Steps in the Transcultural Validation of a Measuring Instrument According to Vallerand (1989)*



### THE VIOLENCE PREVENTION CLIMATE (VPC-14)

The VPC-14 is a 14-item self-reported (patients and staff) questionnaire. Items are rated on a 5-point Likert scale (Hallet et al., 2018). The VPC's original version has two subscales: staff action ( $\alpha = .892$ ) and patient action ( $\alpha = .742$ ). The VPC was validated in the United Kingdom among 421 women and men from 25 psychiatric care units

(362 staff members and 95 patients). Although the authors had identified the 14-item version with the best psychometric properties, we decided to focus on the 40-item preliminary scale given the diversification of the settings used to validate it in the Quebec context. The 40-item preliminary version comprised five subscales: positive staff, negative staff, patient, rules and organizational

(Hallett et al., 2018). Moreover, the dimensions of the 40-item scale are more consistent with the literature on the subject, as it included a contextual dimension which had been excluded from the VPC-14. Approval for the use of the VPC or one of its versions was obtained from the authors of the original tool.

### STEPS IN THE STUDY AND ANALYSIS

1) The French version of the VPC was entitled the *Échelle modifiée du climat de prévention de la violence* (CPV-M-FR). The first step was the preparation of a draft version in French by the research team, followed by backtranslation, i.e., the translation of the French version to English by a specialized French-to-English translator in order to compare it to the original version. Any differences were jointly discussed and resolved by the research team.

2) The assessment of the first translated version was carried out by an expert committee ( $n = 10$ ) with experience in violence management and prevention (patient partners, staff, managers, and researchers). The expert committee conducted a critical review of the translation, the relevance and nature of the items to make sure they were adapted to the Quebec context (1<sup>st</sup> content validation). The committee made a few changes (especially in connection with the choice of vocabulary), with the most substantial being the removal of an item related to the composition of the healthcare team, which was not adapted to the Quebec context.

3) An experimental version of the VPC comprising 39 items was then provided to 10 staff members and 10 patients to complete as a preliminary test to ascertain item clarity. Nine items were returned with at least one comment by a staff member and/or by a patient, and the comments were analyzed. After discussion, five items were left unchanged and four were modified. The changes mainly involved clarifying some of the terms, e.g., in item 12, "Staff members are flexible in applying the rules in the care unit", where "flexible" was changed to "conciliatory".

4) Content validity was assessed by administering the original version (40 items) and the translated version (39 items) to a sub-sample of 14 bilingual participants to examine the

correlations. This sample size was calculated in consideration of the participation rate and of the sample size required to detect an intraclass correlation coefficient (ICC) value of 0.75 (for an alpha of 0.05 and a statistical power of 80%; Bujang & Baharum, 2017).

It should be noted that we used non-parametric analyses for the correlation tests (Spearman) and the paired mean difference test (Wilcoxon) since the data did not follow a normal distribution curve.

5) The reliability analysis was carried out by first examining the internal consistency using Cronbach alpha coefficient analysis. An instrument is considered to be acceptable when the coefficient is above 0.70 and optimal at 0.80 (Geisinger et al., 2013; Gliem & Gliem, 2003). The weakest items in the analysis were assessed to identify problem statements. The Spearman Brown formula assessed validity when a few items were changed. Temporal stability (test-retest) was also assessed for the same sub-sample as in step 4, with the same participants filling out the questionnaire a 2<sup>nd</sup> time within 30 days. Test-retest reliability was assessed using both the Spearman correlation coefficient and the ICC. The latter was measured using a two-way mixed-effect model and absolute agreement. An  $ICC > 0.7$  is used to indicate good test-retest reliability.

6) Internal validity was assessed through exploratory factor analysis to ascertain the underlying factors of the questionnaire. The Bartlett and Kaiser-Meyer-Olkin (KMO) tests respectively showed the appropriateness of the correlation and of the sampling. A parallel analysis and an examination of the scree plot determined the number of factors. The maximum likelihood estimate was used with the direct oblimin rotation because of the expected correlation between the factors. For the internal validity, we calculated the average of the item-to-total correlation corrected for overlap (correlation between each item and the total score for the questionnaire excluding the item itself). A value below 0.20 indicates that the items are not consistent with the overall behavior of the factor. The analyses were carried out using the psych package in the R environment for statistical computing (Revelle, 2020).

7) The final step was to establish standards and normative data, averages, standard deviations, percentile rankings and T-scores were calculated for all participants. T-scores are standardized scores with a mean of 50 and a standard error of 10. Usually, when the measured variable follows a normal distribution, 2/3 (68.26%) of the population should obtain a mean score, i.e. a T-score between 40-60. It is also expected that 95% of the participants have a T-score between 30 and 70. Therefore, T-scores above 70 or below 30 are considered, respectively, as abnormally high and low scores; only 5% of the population obtains below or above average scores.

## ETHICAL CONSIDERATIONS

Ethical and institutional approvals were obtained for the four participating sites. The study received ethical approval CER IPPM 18-19-01 from the research ethics board of the *Institut national de psychiatrie légale Philippe-Pinel*. The standards set out in the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans were met (Conseil de recherches en sciences humaines et al., 2018).

## RESULTS

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### PARTICIPANT CHARACTERISTICS

The sample comprised 308 participants, with 110 patients and 198 staff members. The participants were mainly from general psychiatry units (62%), with 38% from forensic units. The staff were mainly nurses (56%) but there were also special education technicians and psycho-educators, security officers, and orderlies. The patients were mainly diagnosed with mood disorders (38.4%) and psychotic disorders (30.2%). Table 1 lists the participant characteristics according to whether they were patients or staff.

### PSYCHOMETRIC QUALITIES OF THE ÉCHELLE MODIFIÉE DU CLIMAT DE PRÉVENTION DE LA VIOLENCE (MODIFIED VIOLENCE PREVENTION CLIMATE SCALE)

**Internal validity.** The assumptions for multivariate analyses (normality, linearity, homogeneity, and homoscedasticity) were verified

and no anomaly was revealed. The Mahalanobis distance ( $X^2(39) = 72.05$ ) yielded 11 aberrant values removed from subsequent analyses. The Bartlett test showed the appropriateness of the correlation,  $X^2(741) = 4148, p < .001$ , and the KMO test showed the appropriateness of the sampling, MSA = 0.87. A parallel analysis and a Cattell scree plot test suggested three general factors, so a 3-factor model was tested based on this theory. The maximum likelihood estimate was used with the direct oblimin rotation because of the expected correlation between the factors.

Items loading on more than two factors were eliminated along with a factor loading of less than 0.3; each time the exploratory analysis was repeated. After testing all 39 questions, the final 3-factor model contained 23 items: staff action, patient action and therapeutic environment. A good model-data fit is indicated by  $\text{RMSEA} < 0.06$ ,  $\text{CFI} > 0.95$  and  $\text{TLI} > 0.95$  (Hu & Bentler, 1999). This model had moderate adjustment: the RMSEA (0.053, 90% CI [0.04; 0.06]) and the RMSR (0.04) indicated good adjustment, whereas the CFI (0.92) and the TLI (0.89) indicated room for improvement. Table 2 shows the results of the exploratory factor analysis according to the questions in the items in the questionnaire.

Regarding the internal construct validity, averaging the item-to-total correlation corrected for overlap made it possible to obtain values of 0.58, 0.52 and 0.42, for staff action, patient action, and therapeutic environment, respectively. Thus, the results show that each factor has good internal validity, i.e., that the items correlate well overall with the total score for each factor.

**Reliability.** The internal consistency of the factors was analyzed using the Cronbach alpha. Thus, a measurement of 0.89 for staff action suggests very good consistency, while measurements of 0.73 and 0.69 for patient action and therapeutic environment, respectively, instead suggest good internal consistency. The average scores for each factor were: staff action = 3.8 (SD = 0.41), patient action = 3.38 (SD = 0.49), therapeutic environment = 3.03 (SD = 0.54).

Temporal stability was assessed with a subsample of 14 participants. First, the statistically significant correlation coefficients for each test-retest item in the French version range from 0.55

to 0.95. The following items did not have significant correlations (range from -0.03 to 0.51), but were not discarded: VPC2, VPC7, VPC8, VPC9, VPC14, VPC19, VPC23, VPC27, VPC33, VPC34, VPC35, VPC37, and VPC39.

The ICC results can be found in Table 3 and suggest that stability was excellent. Moreover, no significant difference was found between the test and retest measurements in the French version ( $z = -1.650$ ,  $p = 0.099$ ) and in the English version ( $z = -0.413$ ,  $p = 0.6795$ ). Regarding internal consistency, the results were similar between the test-retest measurements, i.e., Cronbach alphas of 0.94 and 0.95 and of 0.93 and 0.94, respectively, for the French and English versions.

**Content validity.** The statistically significant correlation coefficients ( $p < .001$ ) between each item of the French questionnaire and each item of the English questionnaire ranged from .42 to .93, i.e., a moderate to very high correlation. It should

be noted that there were no significant correlations for questions 4, 7, 8, 25, 27, 34, and 36. We can therefore conclude that appropriate convergent validity has been achieved. Similar results were obtained between the measurements of the questionnaire in French and in English (i.e., a Cronbach alpha of 0.93), which indicates excellent internal consistency. Paired t-tests reveal no statistically significant difference between the overall average mean score for the French version ( $M = 3.15$ ,  $SD = 1.15$ ) and the overall average score for the English version ( $M = 3.16$ ,  $SD = 1.16$ ). Regarding the items, a statistically significant difference was found between the mean scores for items 2, 11, 19, and 31.

**Normative data.** The scores for each of the subscales have a distribution without irregularities with 70% or more of the participants having a mean T-score between 40-60 (see Table 4 for T-scores).

**Table 1***Sample Characteristics (n = 308)*

<b>Characteristics</b>	<b>Patients n = 110</b>	<b>Staff n = 198</b>
<b>Setting</b>		
General psychiatry n (%)	69 (62.7)	123 (62.1)
Forensic psychiatry n (%)	41 (37.3)	75 (37.9)
<b>Gender</b>		
Men n (%)	38 (34.5)	111 (56.0)
Women n (%)	72 (65.5)	87 (44.0)
Age, mean (SD)	37 (11.4)	41 (11.0)
Years of experience, mean (SD)	-----	11.34 (9.4)
<b>Education level n (%)</b>		
High school not completed	33 (30.6)	-----
High school degree	35 (32.4)	10 (5.0)
College degree (pre-university or technical programs)	17 (15.7)	68 (34.3)
Graduate degree	23 (21.3)	119 (60.0)
Training on aggression management or de-escalation techniques n (%)	-----	178(90.0)

**Table 2**

*Psychometric characteristics of the Échelle modifiée du climat de prévention de la violence*

Subscale (Cronbach alpha)	Item <sup>a</sup>	Item characteristics			Corrected item – total score correlation
		Mean ± SD <sup>b</sup>	Median <sup>b</sup>	Factor loading	
Staff action (0.89)	2. Les membres du personnel connaissent les raisons qui peuvent causer des conflits entre les patients. [Staff know about issues that may cause conflict between patients.]	4.13 ± 0.77	4.00	0.61	0.53
	3. Les membres du personnel sont à l'écoute des patients. [Staff are good at listening to patients.]	4.23 ± 0.75	4.00	0.77	0.69
	6. Il y a habituellement un membre du personnel disponible avec qui les patients peuvent parler. [There is usually a member of staff around for patients to talk to.]	4.16 ± 0.87	4.00	0.63	0.58
	7. Les membres du personnel connaissent les risques que chaque patient présente. [Staff here have a thorough understanding of each individual patient's risks.]	3.76 ± 1.01	4.00	0.57	0.60
	12. Les membres du personnel sont conciliants dans l'application des règles de l'unité de soins. [Staff are flexible with the rules.]	3.81 ± 0.86	4.00	0.49	0.46
	16. Parfois, les membres du personnel interviennent trop tard pour prévenir la violence. [Staff sometimes intervene too late to prevent violence.]	3.17 ± 1.04	3.00	0.40	0.47
	18. Les membres du personnel ont une attitude positive envers les patients. [The staff have a positive attitude towards patients.]	4.03 ± 0.71	4.00	0.68	0.67
	19. Ici, les membres du personnel connaissent bien les patients. [Staff here have a good knowledge of the patients.]	3.95 ± 0.85	4.00	0.68	0.63
	21. Les membres du personnel de cette unité de soins montrent du respect envers les patients. [Staff on this ward show the patients respect.]	4.36 ± 0.65	4.00	0.74	0.66
	24. Parfois, les membres du personnel font des promesses aux patients sans les tenir. [Staff sometimes make promises to patients that they don't keep.]	3.56 ± 1.00	4.00	0.52	0.53
	25. Les membres du personnel interviennent au bon moment lorsqu'un patient devient	3.90 ± 0.81	4.00	0.59	0.56

Subscale (Cronbach alpha)	Item <sup>a</sup>	Item characteristics			
		Mean ± SD <sup>b</sup>	Median <sup>b</sup>	Factor loading	Corrected item – total score correlation
Patient action (0.73)	<i>agressif.</i> [Staff know when to intervene when a patient is becoming aggressive.]				
	34. <i>Le personnel interagit efficacement avec les patients agressifs.</i> [Negotiation with aggressive patients is used effectively by staff.]	4.01 ± 0.73	4.00	0.60	0.58
	36. <i>Ici, les membres du personnel communiquent adéquatement avec les patients de l'unité de soins.</i> [Staff here know how to talk to patients.]	4.14 ± 0.70	4.00	0.67	0.62
	17. <i>Les patients sont gentils les uns envers les autres.</i> [Patients are nice to each other.]	3.18 ± 0.79	3.00	0.95	0.59
	26. <i>Certains patients en intimident d'autres.</i> [Patients bully other patients.]	2.11 ± 0.82	2.00	0.39	0.46
	37. <i>Les patients de l'unité de soins réussissent à bien maîtriser leurs émotions.</i> [Patients on the ward are good at controlling their inner feelings.]	2.90 ± 0.93	3.00	0.38	0.53
	39. <i>Les patients de cette unité de soins sont respectueux envers les membres du personnel.</i> [Patients on this ward show the staff respect.]	3.28 ± 0.89	3.00	0.44	0.52
	1. <i>Il y a une bonne variété d'activités planifiées pour les patients.</i> [There is a good range of scheduled activities for patients.]	3.04 ± 1.30	3.00	0.44	0.40
	15. <i>Il y a suffisamment de membres du personnel de jour lors des fins de semaine.</i> [There are enough staff on shift in the day time on weekends.]	2.43 ± 1.19	2.00	0.46	0.48
	20. <i>Il y a trop de patients dans cette unité de soins.</i> [There are too many patients on this ward.]	2.92 ± 1.26	3.00	0.65	0.51
Therapeutic environment (0.69)	22. <i>Il y a suffisamment de membres du personnel de nuit.</i> [There are enough staff on shift at night.]	2.78 ± 1.24	3.00	0.54	0.48
	30. <i>L'environnement de l'unité de soins est trop stimulant.</i> [The environment is too stimulating.]	3.10 ± 1.05	3.00	-0.36	0.27
	33. <i>Il y a un endroit paisible où les patients peuvent aller se calmer.</i> [There is somewhere quiet that patients can go to calm down.]	3.22 ± 1.26	4.00	0.40	0.39

<sup>a</sup> Scores for items 16, 20, 24, 26 and 30 were reverse coded.

<sup>b</sup> Range: 1-5. Response scale: (1) strongly disagree; (2) disagree; (3) neither agree nor disagree; (4) agree; (5) strongly agree.

**Table 3***Test-Retest Reliability Results*

<b>Version</b>	<b>ICC (3.1)</b>	<b>IC at 95% ICC (3.1)</b>	<b>Cronbach alpha</b>
<b>French version</b>	0.97	0.92-0.99	T1: 0.94 T2: 0.95
<b>English version</b>	0.99	0.98-1.00	T1: 0.93 T2: 0.94

**Table 4***Raw score, frequency and T-scores for the subscale sum total (n=297)*

<b>Subscale</b>	<b>Raw score range</b>	<b>Frequency (%)</b>	<b>T-scores*</b>
<b>Staff action</b>	26-36	9 (3.03)	<b>&lt;30</b>
	37-43	34 (11.45)	30-39
	44-58	208 (70.03)	40-60
	59-65	46 (15.49)	61-70
	-	-	<b>&gt;70</b>
<b>Patient action</b>	4-6	7 (2.36)	<b>&lt;30</b>
	7-9	45 (15.15)	30-39
	10-15	215 (72.39)	40-60
	16-17	20 (6.73)	61-70
	18-20	10 (3.37)	<b>&gt;70</b>
<b>Therapeutic environment</b>	6-9	9 (3.03)	<b>&lt;30</b>
	10-13	36 (12.12)	30-39
	14-23	213 (71.72)	40-60
	24-28	36 (12.12)	61-70
	29-30	3 (1.01)	<b>&gt;70</b>

\*&lt;30: below average, 30-39: low average, 40-60: average, 61-70: high average, &gt;70: above average

**DISCUSSION**

This study aimed to translate, adapt and assess the psychometric properties of the French version of the Violence Prevention Climate Scale in general and forensic psychiatry settings.

For the purpose of this study, the 40-item preliminary version was chosen. An exploratory factor analysis was conducted yielding a 3-factor (staff action, patient action and therapeutic environment) 23-item solution.

The subscales showed satisfactory internal consistency levels. The “staff action” (0.89) and

“patient action” (0.73) subscales have excellent and good internal consistency, respectively. The “therapeutic environment” factor has a Cronbach alpha at the lower limit (0.69), leaving room for improvement, since the threshold usually retained is  $\sigma > .70$ . However, given its conceptual consistency, we feel that this subscale is key to measuring the violence prevention climate.

Internal validity analyses showed the questionnaire is formulated in a way that is consistent with its underlying theory by studying, in particular, the groupings between the items (Vallerand, 1989). The number of items diverges between the modified version and the original one,

respectively 23 and 14 items, as does the number of factors, respectively three and two factors. It is interesting to note that the three factors identified in the VPC-M-FR (instead of two for VPC-14) seem to align with the empirical literature and the experiential knowledge on which the original scale was based. Our results therefore support the decision to prioritize the preliminary version of the VPC which included the items related to the therapeutic environment, since the exploratory structural equation of the CPV-M made it possible to identify this factor.

The staff action factor is also identified in the VPC-14. The items under this label require an approach focusing on the person and on the therapeutic relationship. To this end, a systematic review including 39 studies on improving violence prevention and coercive measures according to patient and staff perception highlights the importance of having more positive interaction between the staff and the patients by improving communication (Van Der Merwe et al., 2013). Moreover, these findings are consistent with and are a continuum of the recent scientific progress in procedural justice in psychiatric settings, which suggests the importance of the quality of interpersonal communications and relationships with regard to violence prevention or the use of restrictive practices (Ireland et al., 2019; Wittouck & Vander Beken, 2019). Knowing the person better also helps staff to understand the person's risk factors (and needs) and triggers and how to plan specific intervention according to their needs, which also echoes the risk-need-responsivity model which is widely used by forensic and correctional staff (Bonta & Andrews, 2017).

With regards to the patient action factor, the items retained highlight the issues related to the person's ability to maintain positive interactions, both with their own emotions and with their peers and the staff. This factor is also a subscale of the VPC-14 (Hallett et al., 2018). Patients play an important role in maintaining a safe environment and, despite behavioral characteristics that can be attributed to their mental disorders, they are called upon to recognize their power to promote healthy interaction, for example through a joint crisis management plan (Lenagh-Glue et al., 2018). This factor also suggests that interpersonal

relationships between users of a given unit can contribute to the violence prevention climate in psychiatric settings. While staff-patient power dynamics have been abundantly documented (Perkins et al., 2012; Rose et al., 2015), the quality of interpersonal relationships between users of a given unit is worth exploring further to better understand their importance relative to violence prevention.

As for the therapeutic environment factor, it includes both items relating to the organization of care and to the physical environment. This subscale has not been remained significant for the final version of the VPC-14 (Hallett et al., 2018). When strategic choices are made with regard to how the surroundings are arranged, this aspect plays a role in improving patients' emotional state and behavior (for example, spatial layout, expanded view in public spaces, variety in the scheduled activities) (Kronish & Poldma, 2013; van der Schaaf et al., 2013). Moreover, some studies have demonstrated that the characteristics of the physical environment are linked to violence in psychiatric units (Papoulias et al., 2014).

Lastly, concerning temporal stability, where participant scores are expected to remain stable from one completion of the questionnaire to the next, analyses suggest that stability is excellent. Since analyses have shown a strong correlation between the translated scale and its original version, it can also be said that the two versions are closely connected, which thus establishes the convergent validity of the adapted version.

## POTENTIAL CLINICAL IMPACT

As a result of this collaboration between clinical and academic settings, researchers, management, staff, and patients alike will benefit from the potential impact of this tool. This questionnaire is easy and quick to administer and can be used as a basis for both patient and staff discussions about violence prevention in psychiatric and forensic settings.

Depending on the score obtained for the various subscales, areas for improvement can be identified and ongoing training needs targeted for staff in the area of violence prevention in a specific setting. For example, certain nursing skills could be targeted in the recommended approaches to crisis

situations (Geoffrion et al., 2018); patients could be empowered through a joint crisis plan (Farrelly et al., 2015), or improvements could be made to the therapeutic environment by scheduling meaningful activities or building comfort rooms (Väkiparta et al., 2019). New clinical intervention and training activities that meet the identified need could then be set up and assessed using this tool. Thus, this assessment will contribute to the production of knowledge for a clinical practice based on relevant data, which will promote a safe environment and a feeling of safety for both patients and staff.

Through this knowledge production, patients are involved in service delivery, thus allowing them to be active agent in their own care. Indeed, patients' involvement in discussions and decision-making contributes to their self-determination, thus promoting a relation of equality between patient and staff (Pratt, 2018). This engagement can remodel power structures by acknowledging patients' voices (Friesen et al., 2019), a process which is particularly relevant in violence prevention.

Finally, from a scientific standpoint, researchers will have a validated tool to use to obtain proximal indicators in projects implementing and assessing primary, secondary, and tertiary measures to prevent violence in psychiatric and forensic settings.

## STUDY LIMITATIONS

Since the number of items and factors examined in this study differs from the original scale, it may be necessary to confirm the factor structure with confirmatory analysis on an independent sample. Moreover, since this is a self-reporting measuring instrument, the presence of social desirability may be possible. It is also recommended to carry out convergent validation with other instruments assessing similar constructs, such as the POPAS Scale which measures the perceived prevalence of aggression (Geoffrion et al., 2017) or the Coercion Experience Scale which measures perceived coercion (Golay et al., 2019). Due to the VPC-14 and VPC-M-FR scales' structural differences, it is not possible to identify them as equivalent. Our results showed that the mean score of the VPC-M-FR and the 40-item

preliminary version of the VPC-14 did not differ statistically in a subsample of our study. Thus, it would be relevant to proceed with the cross-cultural validation of the 40-item preliminary version of VPC-14. It would then be possible to compare its psychometric properties in an English-speaking North American context.

## CONCLUSION

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The Violence Prevention Climate Scale is at the crossroads of violence prevention and the climate in the unit. This study made it possible to establish that the psychometric properties of the VPC-M-FR measuring this concept in psychiatric and forensic patients and staff are satisfactory. The factorial structure of the VPC-M-FR is also conceptually consistent because of the inclusion of the therapeutic environment, which is not addressed in the other scales for assessing violence prevention. Indeed, this is the first instrument that addresses the way in which both patients and staff perceive violence prevention in all its complexity, as the other scales are limited to certain aspects only (e.g., risk assessment, history of violence, prevalence of aggression). Lastly, the results of this study highlight the scale's potential to facilitate the development and assessment of violence prevention interventions, which will have to be demonstrated in new studies.

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**Authors' contribution:** MHG, MD, PPL, CL, JST and AC and designed the study. MHG and MD supervised data collection. MD collected the data. MHG and AC supervised data analysis and FJB analyzed the data. MHG organized the article and prepared the first draft. FJB drafted the methods section and AC the discussion section. All authors revised and approved the final version of the manuscript.

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# Échelle modifiée du climat de prévention de la violence (CPV-M-FR)

**Membres du personnel :** Pensez à l'unité de soins où vous travaillez habituellement en répondant aux questions.

**Patients :** Pensez à votre unité de soins en répondant aux questions.

Lisez attentivement chacun des énoncés suivants. Cochez la case avec laquelle vous êtes d'accord ou en désaccord pour qualifier l'énoncé.

	Fortement d'accord	D'accord	Ni d'accord ni en désaccord	Pas d'accord	Fortement en désaccord
1. Il y a une bonne variété d'activités planifiées pour les patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Les membres du personnel connaissent les raisons qui peuvent causer des conflits entre les patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Les membres du personnel sont à l'écoute des patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Il y a habituellement un membre du personnel disponible avec qui les patients peuvent parler.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Les membres du personnel connaissent les risques que chaque patient présente.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Les membres du personnel sont conciliants dans l'application des règles de l'unité de soins.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Il y a suffisamment de membres du personnel de jour lors des fins de semaine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Parfois les membres du personnel interviennent trop tard pour prévenir la violence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Les patients sont gentils les uns envers les autres.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Les membres du personnel ont une attitude positive envers les patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Ici, les membres du personnel connaissent bien les patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Il y a trop de patients dans cette unité de soins.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Échelle modifiée du climat de prévention de la violence (CPV-M-FR) - suite

**Membres du personnel :** Pensez à l'unité de soins où vous travaillez habituellement en répondant aux questions.

**Patients :** Pensez à votre unité de soins en répondant aux questions.

Lisez attentivement chacun des énoncés suivants. Cochez la case avec laquelle vous êtes d'accord ou en désaccord pour qualifier l'énoncé.

	Fortement d'accord	D'accord	Ni d'accord ni en désaccord	Pas d'accord	Fortement en désaccord
13. Les membres du personnel de cette unité de soins montrent du respect envers les patients.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Il y a suffisamment de membres du personnel de nuit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Parfois les membres du personnel font des promesses aux patients sans les tenir.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Les membres du personnel interviennent au bon moment lorsqu'un patient devient agressif.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Certains patients en intimident d'autres.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. L'environnement de l'unité de soins est trop stimulante.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Il y a un endroit paisible où les patients peuvent aller se calmer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Le personnel interagit efficacement avec les patients agressifs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Ici, les membres du personnel communiquent adéquatement avec les patients de l'unité de soins.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Les patients de l'unité de soins réussissent à bien maîtriser leurs émotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Les patients de cette unité de soins sont respectueux envers les membres du personnel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>