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Featured Article

French Translation and Validation of the Mayo High Performance Teamwork Scale for Nursing Students in a High-Fidelity Simulation Context

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Abstract

Background: The Mayo High Performance Teamwork Scale (MHPTS) was developed to measure teamwork skills in simulation. As no such tool was available in French, the main purpose was to translate the MHPTS. The secondary objective was to evaluate the reliability of this scale for use with French-Canadian nursing students.

Method: The cross-cultural adaptation followed four steps: (a) translation, (b) back-translation, (c) committee of experts, and (d) pretest. In regard to reliability, internal consistency was measured with coefficient alpha in a pilot study.

Results: The committee of experts (n = 7) judged the content as clear and comprehensive. Comments from the pretest were used to improve the scale (n = 44). Internal consistency is acceptable ($\alpha = 0.74$) among nursing students (n = 70).

Conclusion: The Canadian French version of the MHPTS has demonstrated acceptable reliability and is now available to assess teamwork in nursing students.

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The Mayo High Performance Teamwork Scale (MHPTS) was developed by Malec et al. (2007) to assess high-performance teamwork skills in simulation. In life-threatening situations, health professionals working in a multidisciplinary team need to react quickly and accurately (Murphy, Curtis, & McCloughen, 2016). Intermediate- and high-fidelity simulations improve team training and minimize nontechnical errors by providing a safe learning environment for the learners of health science education programs (Brown & Overly, 2016; Murphy et al., 2016; Weller, Nestel, Marshall, Brooks, & Conn, 2012). Simulation is an educational strategy that has been shown to provide many benefits, such as improved skills, self-confidence, leadership, and communication abilities (Brown & Overly, 2016; Motola, Devine, Chung, Sullivan, & Issenberg, 2013; Murphy et al., 2016; Walsh & Wolf, 2012). However, it also has limitations such as anxiety, anticipatory performance-related stress, and increasing the cognitive load of participants, which may lead to exhaustion (Bremner, Aduddell, Bennett, & VanGeest, 2006; Centre d'innovation en formation infirmière, 2008; Jeffries, 2007; Larue, Pépin, & Allard, 2013; Nehring & Lashley, 2010; O'Donnell, Creamer, McFarlane, Silove, & Bryant, 2010; Ordre des infirmières et infirmiers du Québec, 2009).

Key Points

- Multidisciplinary teams need to intervene quickly and effectively in emergency situations. However, in trained teams, nontechnical errors can occur and are often accountable to poor teamwork.
- High-fidelity simulation and simulation-based training are reputed methods to improve nontechnical skills such as teamwork in both medical and nursing fields.
- The Canadian French version of the Mayo High Performance Teamwork Scale demonstrates acceptable reliability and is the first validated instrument to assess French-speaking nurses' teamwork in simulated settings.

In Quebec, there are two possible university curriculums to obtain a nursing degree. The most common route for obtaining a degree is the completion of a three-year baccalaureate program (initial training program) after a college degree in nature sciences. An alternative option is to complete a college degree in nursing, then, to obtain an additional two years of university training, leading to a baccalaureate degree in nursing (integrated nursing program). In both curriculums, students are taught critical care nursing. To prepare them for critical care settings and the complex inherent situations that require teamwork, as well as effective communication, several educational institutions rely on intermediate- and high-fidelity simulations. Simulation has been shown to help transition these students to the critical care environment.

After a literature review, we identified the MHPTS (Malec et al., 2007) as the most relevant scale to assess teamwork skills in simulated contexts. Indeed, the MHPTS was chosen because it is a recent scale applicable to simulation in health sciences. Moreover, the MHPTS is based on crisis resources management (CRM) skills and was developed to assess these skills, which are further described in the conceptual framework section. The students in our baccalaureate programs learn those skills with the CRM model, which makes it coherent to assess them with the MHPTS. The MHPTS is a valid and reliable tool (Malec et al., 2007) that could be used to assess students' ability to work collaboratively in teams during critical care–related high-fidelity simulations. Unfortunately, the scale was not available in French and restrained French-Canadian educators from using a valid and reliable instrument. In fact, the International Nursing Association for Clinical Simulation and Learning Standards of Best Practices: Simulation™ (INACSL, 2016) clearly states that simulation-based evaluations should be completed with valid and reliable instruments. Investigating teamwork is of paramount importance because poor teamwork has long been identified as a cause of preventable errors and contributor to mortality, notably by the Institute of Medicine in a report entitled: ''To Err is Human'' (IOM, 1999).

For those reasons, we undertook a cross-cultural adaptation of the MHPTS, from English to Canadian French, based on Beaton et al.'s (2000) methodology. The cross-cultural adaptation of pre-existing scales has many advantages. For example, it requires fewer resources than to develop and validate a new instrument and is therefore a solution to save time and money (Burns & Grove, 2017). Furthermore, the translation of scales allows researchers to access reliable and valid measures of concepts of interest in their own languages, thus providing a data collection based on a certain level of evidence instead of creating a new one (Sousa & Rojjanasrirat, 2011). Finally, it renders possible the comparison of the results obtained from a translated version to the original. Indeed, simulation standards and the concept of teamwork apply to all professions, in all locations, and it is essential that we enable comparison of teamwork practice worldwide. The translation of this scale will enhance its validity by proof accumulations and facilitate the generalization of cross-cultural health care research (Sousa & Rojjanasrirat, 2011).

Conceptual Framework

The inception of this study was based on the CRM model (Figure 1), which is composed of eleven key determinants of an effective crisis management, including effective communication, situational awareness, anticipating and planning events, designating the leader, establishing roles, distributing

Figure 1 Crisis resource management (CRM) model.

the workload, using cognitive aids, allocating resources, using all available information, and environment awareness (Goldhaber-Fiebert et al., 2008; Murphy et al., 2016; Rudy, Polomano, Murray, Henry, & Marine, 2007). To date, CRM has been used in many health sciences education programs to improve team performance and reduce nontechnical errors through simulation (Murphy et al., 2016).

Objectives

The main purpose of this article is to present the cross-cultural adaptation process and the psychometric properties of the Canadian French version of the MHPTS (MHPTS-F), for nursing students taking part in high-fidelity emergency simulations. The secondary objective is to evaluate the reliability of the MHPTS-F for use with French-Canadian nursing students.

Material and Methods

Design

The goal of the method used was to reach equivalence between the original scale and the culturally adapted version, which targets a specific population that is different from the original one (Beaton, Bombardier, Guillemin, & Ferraz, 2000). Because the target population of the present study speaks another language and lives in another country, cross-cultural adaptation was required (Beaton et al., 2000). The following section describes the different steps involved in the adaptation process (i.e., translation, back-translation, committee of experts review and pretesting) and other activities. Moreover, the reliability testing of the scale was achieved by means of a pilot study. Figure 2 summarises the study flow.

Scale

Based on the CRM model, the MHPTS is composed of two sections, of eight items each. In the first section, participants rate their perception of the qualities displayed by the team during the simulation, such as leadership or communication. The possible answers are (0) never or rarely, (1) irregularly, or (2) regularly. The second section is similar and requires participants to share their perception of the team's qualities. In this section, the possible answers are on

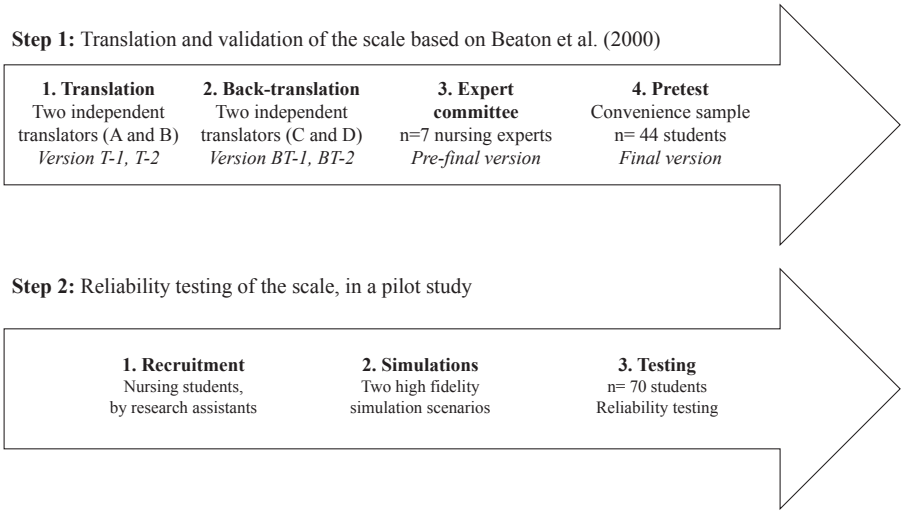

Figure 2 Flow diagram of the cross-cultural adaptation process.

the same response scale; however, participants can also select not applicable (NA) if the situation did not occur in which these types of response were required (Malec et al., 2007). The MHPTS was originally developed and tested in a quasiexperimental study involving 19 medical residents and 88 American nurses who participated in a CRM-based training course that included simulated critical care scenarios based on critical-care relevant cases (Malec et al., 2007). The scale data showed satisfactory psychometric qualities, with good internal consistency ($\alpha = 0.85$) and sensitivity to change after CRM-based training (pre-post: paired t test $= 4.15$; $p < .001$).

Cross-Cultural Adaptation Process

As described in the previous section, cross-cultural adaptation involves steps, which will be explained individually. The first step, ''translation,'' involved submitting the MHPTS to two independent translators (translators A and B) whose first language is Canadian French (Beaton et al., 2000). These translators produced two Canadian French versions, which were given the acronyms T-1 and T-2 (Beaton et al., 2000). It has been suggested that the first translator should be aware of the concepts being evaluated, whereas the other should have no knowledge of the concepts nor have any associated clinical background (Beaton et al., 2000). However, in the context of this study, although both had previously translated instruments used in health care, none were familiar with CRM concepts.

Once versions T-1 and T-2 were achieved, two different and independent translators (translators C and D), blinded from the original version, translated the T-1 and T-2 versions back to the original English language and created BT-1 and BT-2 (Beaton et al., 2000). The purpose of this ''back-translation'' step is to expose any inconsistencies in the translation (Beaton et al., 2000).

The pairs of translators involved in the two aforementioned translation steps were professionals working in separate firms, and to the best of our knowledge, they did not interact to provide the translated (T-1 and T-2) or back-translated (BT-1 and BT-2) versions of the scale.

Committee of Experts Review

To consolidate the different versions of the MHPTS, a committee of experts was created, including seven registered nurses: two of which were professors with a doctoral degree, two doctoral candidates, one with a master's degree, and two students in the master program. Most members of the Committee had either expertise in methodology, research, simulation, statistics, or critical care. They were all bilingual (French and English).

To transculturally adapt the MHPTS, each version of the original scale T-1, T-2, BT-1, and BT-2 was assessed to develop a ''prefinal version'' (Beaton et al., 2000). Each item of the scale was examined individually and each interaction or comment was documented in a written report by one of the experts. Specific attention was paid to reaching the various forms of equivalence—meaning (semantic), idioms (idiomatic), cultural experience (experimental), and conceptual—according to Beaton's method. Once a consensus was reached on every item, the ''prefinal version'' was pretested.

Pretest

To pretest the MHPTS-F, we created a convenience sample made of final-year nursing students recruited from the Integrated Bachelor Degree in Nursing Program of a Quebec university. These students had previously completed a college degree program in nursing and therefore had potentially more clinical and simulation experience as compared with initial nursing training program students. Every student in the class was invited to participate, there being no exclusion criteria. Students were asked to provide feedback on the meaning of both the items and the response scales based on their previous simulation experiences.

Reliability Testing in a Pilot Study

The participant's answers from a pilot study were used to evaluate the internal consistency of the MHPTS-F with the target population, using coefficient alpha. The purpose of this pilot study was to assess the impact of an educational intervention on student nurses' teamwork skills. This pilot study was conducted to determine the feasibility of the research process and to estimate the preliminary impact of the intervention before conducting a large-scale randomized controlled trial.

Population for the Pilot Study

Final-year nursing students in the Initial Bachelor Degree, different from the sample for the pretest, were recruited from one Quebec University, separated in two campuses. This accessible population consisted of 60 nursing students from a suburban campus and 40 nursing students from an urban campus. All students attending the emergency care class were given a 15-minute presentation on the project by research assistants (C.O.D. and C.V.) and were then invited to participate in it. There were no exclusion criteria. A convenience sample of students was created.

Procedure for the Pilot Study

A week before the simulations, students received an introduction course of 30 minutes on the CRM. Because the students are beginners in critical care, the focus was on four of the eleven elements, which communicate effectively, establish role clarity, designate leadership, as well as anticipate and plan. Students participated in two high-fidelity simulations in the simulation center, in which they

had either a passive (observer) or an active role (participant). The scenarios were an anaphylactic shock and a symptomatic bradycardia. At the end of the two simulations, students were asked to complete the Canadian MHPTS-F.

Ethics

Ethical approval from the *Comité d'éthique de la recherche de l'éducation et des sciences sociales* of the *Université de Sherbrooke* was obtained before the study. The research project was presented to the students by research assistants. Participation (pretest and pilot study) was voluntary and students could withdraw at any time. There were no incentives for participation. Explanations regarding the anonymity process (i.e., codified data) were transmitted to the participants. Free and informed consent was obtained from the participants, after a presentation on the study.

Analysis

Statistical analyses were performed using SPSS, version 23.0. Means, standard deviations, as well as frequencies and proportions were used to describe the sample. To evaluate reliability, coefficient alpha was calculated for the first eight items of the scale because most of the participants did not fully complete the second part of the scale. The results of the pretest were not included in the reliability analysis. The significance level was set at $\alpha = 0.05$ for all the analyses. There were six missing elements of data, and associated observations were removed from the analysis.

Results

Cross-Cultural Adaptation Process

A few inconsistencies were identified between BT-1, BT-2, and the original version. These differences supported the choices of a word over another.

Committee of Experts Review

The committee of experts examined each item of the scale, basing their discussions on the four scale versions T-1, T-2, BT-1, and BT-2. Although there were a few differences in translated versions of the scale, discrepancies were resolved by the input of members of the expert committee and were discussed until consensus was reached on the adequate wording of every item. Indeed, they had to reach a consensus on the divergences between versions T-1 and T-2 to create the prefinal version. Verifications were made to ensure that the content was consistent with the CRM. The experts found the content validity to be appropriate for the context in which it would be used. The prefinal version (Figure 3) created by the committee of experts was then pretested.

Pretesting

Five students of 49 possible participants did not complete the questionnaire. A total of 44 participants did the pretest. Most students understood the items and the response scales. The vast majority of comments were about items that required prior training to be understood, training that the students had not yet received. However, because changes to these items could have impaired the equivalence between the Canadian French version and the original, none were made. After the pretest, only one item from the second section of the scale (item #9) was modified to enhance its comprehensiveness (it involved a minor change related to the context) because 48% (21/44) of the participants were unsure whether they understood the concept being measured. Although this step does not evaluate construct validity, it does help us to understand how the studied population interprets items (Beaton et al., 2000). Further psychometric testing was done and will be described in the following section.

Reliability Testing

Sample Description

A total of 70 students took part in the pilot study. These participants were mostly women (n = 65, 93%) with an average age of 23 years (SD: ±4.7), the majority having never participated in a high-fidelity simulation (n = 65, 93%).

Internal Consistency

Internal consistency indicates that the strength of interconnections is relevant to understanding which items in the scale are associated and reflects the degree of homogeneity (Streiner, Norman, & Cairney, 2015). Reliability for the first eight items was acceptable, with a coefficient alpha of 0.74. The interitem correlations varied from weak (r = 0.09) to moderate (r = 0.65). The total variance of the scale was 29.94.

Summary of Results

The MHPTS-F was successfully translated and adapted to a French-Canadian population of nursing students. Indeed, the committee of experts qualitatively approved the content validity of the first version for this population. After the pretest, only one item was revised, supporting the quality of the translation process. Finally, the reliability of the scale for the first eight items was acceptable.

Discussion

This article describes the cross-cultural adaptation process that was suggested by Beaton et al. (2000) and subsequently applied to the MHPTS to produce a translated

Échelle Mayo de travail d'équipe à haut rendement

Utilisez l'échelle suivante pour évaluer l'équipe dans chaque aspect énuméré* [Use the following scale to rate the team on each dimension] *:

0	*1*	*2*
Jamais ou rarement	***De façon irrégulière***	***De façon constante***
[Never or rarely]	**[Inconsistently]**	**[Consistently]**

***Soyez le plus juste possible dans votre évaluation. La plupart des équipes n'ayant pas beaucoup travaillé ensemble ne peuvent démontrer les qualités décrites dans le questionnaire de façon constante.* [Please rate conservatively. Most teams that have not worked extensively together do not consistently demonstrate many of the qualities described in the scale]**

***Évaluez tous les items de 1 à 8.* [Always rate items 1–8]**

___ *(1) Tous les membres de l'équipe reconnaissent clairement qui est le « leader ».* [A leader is clearly recognized by all team members]

___ *(2) Le « leader » s'efforce de maintenir un bon équilibre entre son autorité et la participation des autres membres de l'équipe.* [The team leader assures maintenance of an appropriate balance between command authority and team member participation]

___ *(3) Chaque membre de l'équipe comprend clairement son rôle.* [Each team member demonstrates a clear understanding of his or her role]

___ *(4) Les membres de l'équipe s'encouragent mutuellement à surveiller tous les indicateurs cliniques importants durant la procédure ou l'intervention.* [The team prompts each other to attend to all significant clinical indicators throughout the procedure/intervention]

___ *(5) Quand les membres de l'équipe sont actifs auprès du patient, ils verbalisent à voix haute leurs actions.* [When team members are actively involved with the patient, they verbalize their activities aloud]

___ *(6) Les membres de l'équipe répètent ou reformulent les consignes et les clarifications afin d'indiquer qu'ils ont bien entendu.* [Team members repeat back or paraphrase instructions and clarifications to indicate that they heard them correctly]

___ *(7) Les membres de l'équipe se réfèrent aux protocoles et aux listes de vérification (« checklists ») pour les procédures/interventions.* [Team members refer to established protocols and checklists for the procedure/intervention]

___ *(8) Tous les membres de l'équipe s'impliquent adéquatement et participent à l'activité.* [All members of the team are appropriately involved and participate in the activity]

***Pour les items de 9 à 16, on peut inscrire la mention s.o. (sans objet) s'il n'y a pas eu de situations où ce type de réponse est requis.* [Items 9–16 may be marked "NA (not applicable)" if no situations occurred in which these types of responses were required]**

___ *(9) Les désaccords et conflits entre les membres de l'équipe sont résolus sans perdre la situation de vue.* [Disagreements or conflicts among team members are addressed without a loss of situation awareness]

___ *(10) S'il y a lieu, on interchange les rôles afin de mieux répondre aux situations urgentes ou émergentes.* [When appropriate, roles are shifted to address urgent or emergent events]

___ *(11) Lorsque les consignes ne sont pas claires, les membres de l'équipe soulignent leur incompréhension et demandent qu'elles soient répétées ou clarifiées.* [When directions are unclear, team members acknowledge their lack of understanding and ask for repetition and clarification]

___ *(12) Les membres de l'équipe reçoivent – de manière positive – les commentaires qui visent à éviter/limiter les erreurs ou à obtenir des clarifications.* [Team members acknowledge—in a positive manner—statements directed at avoiding or containing errors or seeking clarification]

___ *(13) Les membres de l'équipe attirent l'attention sur les actions susceptibles, à leur avis, d'entraîner des erreurs ou des complications.* [Team members call attention to actions that they feel could cause errors or complications]

___ *(14) Les membres de l'équipe réagissent aux erreurs ou complications possibles en utilisant des procédures afin d'éviter l'erreur ou la complication.* [Team members respond to potential errors or complications with procedures that avoid the error or complication]

___ *(15) Lorsqu'un commentaire visant à éviter/limiter des erreurs ou des complications ne suscite pas de réaction, les membres de l'équipe persistent à obtenir une réaction.*[When statements directed at avoiding or containing errors or complications do not elicit a response to avoid or contain the error, team members persist in seeking a response]

___ *(16) Les membres de l'équipe demandent de l'aide à leurs coéquipiers avant ou pendant les périodes de surcharge de travail.* [Team members ask each other for assistance prior to or during periods of task overload]

Original version: *Mayo High Performance Teamwork Scale* (Malec et al., 2007) translated and revised by [Hidden for review]

Figure 3 French Mayo High Performance Team Scale (F-MHPTS).

Canadian French version for use in a population of nurses. It also describes the content validity assessment performed qualitatively by the committee of experts, the pretest process, and the reliability estimates.

The members of committee of experts (n = 7) who reviewed all the translations and decided which items would be included in the prefinal version had multiple areas of expertise (i.e., critical care, CRM, cross-cultural

adaptation of scales, pedagogy, research, and simulation) and came from various geographic locations (urban and suburban) and professional fields (emergency care, intensive care). Many authors recommend that such committees be composed of at least six to ten experts in complementary fields of expertise to ensure content validity (Beaton et al., 2000; Grant & Davis, 1997; Lynn, 1986; Sousa & Rojjanasrirat, 2011; Waltz, Strickland, & Lenz, 2005). However, the experts all worked in the same field (nursing sciences). This fact should not have any major impacts on the present study as the study population is composed of nursing students. Some adaptations could be required if the MHPTS-F were to be used with another health alliance professional population. During the committee of experts meeting, several rounds of discussions on the selection of words were held until a consensus was reached that enhanced the comprehensiveness of the items, as has been recommended by many authors (Beaton et al., 2000; Sousa & Rojjanasrirat, 2011; Vallerand, 1989). Attention was also given to choosing the same terminology that the students had learned in French in relation to the CRM to ensure relevance and uniformity.

To conduct the pretest, a sample of final-year nursing students (n = 44) was constituted. It is believed that these students shared common philosophical views, as well as similar academic and work environments, thus making this choice of population appropriate to ensure the scale will be understandable by the target population (Beaton et al., 2000). This number of participants is more than sufficient according to many authors (Beaton et al., 2000; Sousa et Rojjanasrirat, 2011; Vallerand, 1989). However, the students in the pretest sample had more experience in simulation and exposure to crisis situations in their work environment than those in the pilot study population. This experience might have given them a different perception of the items in the scale compared with the perception of the Initial Bachelor Degree in Nursing Program students. Overall, the pretest generated only a few minor changes. The pretest participants had not yet been exposed to the CRM at the time of the pretest, which explains the large degree of misunderstanding on the concept being measured. For this reason, some suggestions were not taken under consideration.

Almost all the pilot participants (n = 64/70, 91%) completed the first eight items of the scale but not all the next eight. Two main factors could explain these results: (a) the items' occurrence or nonoccurrence in the scenario and (b) the active or passive role of the participants. First, the MHPTS is a generic scale that was created to be applicable in multiple simulation contexts with many possible interaction flows. Depending on the choice of scenario, the study population, and the complexity of the crisis, some items may or may not occur in the simulation (Malec et al., 2007). Because the nursing students in the present study were beginners, the simulation was designed to have a low degree of difficulty. This decreased the occurrence of many items of the second half of the scale, which explains the multiple "NA" answers. Indeed, the scale was initially designed to assess teamwork in health professional already in practice (Malec et al., 2007). The hypothesis that only the first half of the scale is relevant for novice students emerged from this finding. The validation process should be continued to further document the relevance of each item of the MHPTS with novice learners. Second, some of the students who answered the scale had taken part in the simulation, whereas others had only been observers. The research team considered that the content of the scale was transferable to observers. Because the MHPTS had not been developed for use in a heteroevaluation, some observers could have shown a lack of understanding or feeling concerned toward some items (Malec et al., 2007). It would be interesting in future studies to further validate the scale's use as a heteroevaluation and to compare the teamwork perceptions of both participants and observers in a simulation.

The internal consistency was acceptable for the first eight answered items. Indeed, these items covered the three facets of teamwork, as defined by the CRM, and seemed to be related to each other, which demonstrates that only one concept was being measured. This reliability estimate was lower than the reliability estimates found with the original scale, which had coefficient alphas of between 0.81 and 0.83 (Malec et al., 2007). Interitems correlations were weak to moderate. Interitem correlations of the original scale were not presented (Malec et al., 2007). This could be explained by the fact that the participants completed the scale after completing two different simulation scenarios. Therefore, they could have rated teamwork as displayed in the first, the second, or both scenarios that they took part in, and this may have impacted the answers. Overall, the scale still demonstrated an acceptable reliability when used to assess French-Canadian nursing students taking part in high-fidelity emergency simulations.

Limitations

Several limitations should be taken into consideration regarding the results of this study. Because the translators were not part of the committee of experts, they could not defend or support their linguistic choices. In addition, most of the participants did not fully complete the second half of the scale because the items in it were NA to the scenarios they took part in. This limited the researchers' capacity in carrying out a reliability evaluation of the second half of the scale. It would be interesting to further evaluate the scale's psychometric properties in various complex scenarios to ensure the occurrence of these second-half items. Some participants played an active role in the simulation, whereas others were just observers. It is possible that participants and observers may have not perceived in the same way the teamwork displayed in the simulation and, because of this,

may have answered differently. Exploring the use of the MHPTS as a heteroevaluation scale could be interesting to compare such views in future studies. Finally, the participants completed the scale after their participation as observers or active participants in two different scenarios. Because they completed the scale after the second simulation, it is not possible to know if they rated teamwork as displayed in the first, the second, or both scenarios they took part in. Therefore, they might have completed the scale while referring to the scenario with the most or least teamwork skills demonstrated. This halo effect might have had an impact on the results of the present study. In future studies, handing out the scale questionnaire immediately after each separate scenario may provide more precise results.

Relevance to Nursing

The cross-cultural adaptation of the MHPTS has several implications for education, research, and practice. To our knowledge, this is the first questionnaire available in Canadian French that enables the description of teamwork, as shown by student nurses taking part in high-fidelity emergency simulations. It would be interesting to explore if this scale could be useful in supporting nursing education by providing a guide for the debriefing of crisis simulations. In research, the MHPTS-F could be used to compare different populations of nurses or assess the effectiveness of interventions that promote teamwork. Further research is needed to explore the use of the scale in a heteroevaluation of teamwork and to compare the perceptions of teamwork in participants and observers who took part in the same simulation. Finally, some adaptations could be made to allow the use of the scale by other health professionals in multidisciplinary complex simulations. As for the use of the scale in clinical practice, the ability to accurately identify the strengths and weaknesses of a team facing a crisis will facilitate the development of training programs that are better adapted to the specific needs of this population.

Conclusion

This article described the cross-cultural adaptation, qualitative content validity, and reliability of the MHPTS-F which was used to assess teamwork in a population of student nurses taking part in high-fidelity emergency simulations. This version was created after a rigorous process and demonstrated the clarity and comprehensiveness of the content, as well as an acceptable reliability. Studies should be undertaken to validate the use of the scale as a heteroevaluation and to compare the perceptions of teamwork by participants and observers in a simulation. Moreover, some adaptations might be needed to enable the use of this scale by other health professionals and for novice. The MHPTS-F is now available for use in assessing teamwork in nursing students. To our knowledge, it is the first questionnaire in Canadian French that achieves this goal.

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