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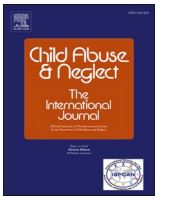

The Extended Modified Maltreatment Classification System (EMMCS): A validation study

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ABSTRACT

Background: One way to measure maltreatment is to code the narratives in Child Protective Services (CPS) files on a standardized instrument. This serves to document dimensions of maltreatment—such as types/subtypes, severity, frequency and chronicity—difficult if not impossible to measure from administrative data. The instrument most commonly used for this purpose is the Modified Maltreatment Classification System (MMCS, English & Longscan, 1997). Few studies have focused on the psychometric properties of such instruments.

Objective: This study sought to present the Extended Modified Maltreatment Classification System (EMMCS) and inter-rater reliability and convergent validity data for this updated instrument.

Participants and setting: The convenience sample was composed of the CPS files of 240 children 0 to 17 years old reported to a single CPS agency in Québec (Canada) and for which the allegations were declared substantiated by CPS practitioner.

Methods: Written narratives were coded on two instruments: the EMMCS (two coders) and the form used in the *Étude d'incidence québécoise sur les situations évaluées en protection de la jeunesse - short form* (FEIQ-SF, one coder). Inter-rater reliability was assessed by calculating kappas and intra-class correlations for all variables generated by the EMMCS for two coders and convergent validity by measuring the relationship between the EMMCS maltreatment variables and: a) the FEIQ-SF maltreatment variables and b) the FEIQ-SF child's functioning problems on the FEIQ.

Results: Inter-rater agreement on nearly all EMMCS variables (97 %) proved excellent, and EMMCS maltreatment type variables showed good convergent validity with FEIQ-SF variables (narrow convergent validity) and with indicators of child's functioning problems (broad convergent validity).

Conclusions: Overall, the results of our study indicate that the EMMCS possesses excellent inter-rater reliability and good convergent validity. These promising results underscore the potential of the EMMCS to become a reference in the field.

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1. Introduction

Child maltreatment is the abuse and neglect that occurs to children under 18 years of age. It includes all types of physical and/or emotional ill-treatment, sexual abuse, neglect, negligence and commercial or other exploitation, which results in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power (WHO, 2024). It is a global phenomenon that affects millions of children and adolescents. Prevalence estimates using official statistics are generally lower (Esposito et al., 2023) than the number obtained via self-report measures because Child Protective Services (CPS) files are limited to cases supported by victim disclosure, witness testimony or observed signs of maltreatment. Compared to self-report measures, CPS statistics are not subject to self-report social desirability bias and are less intrusive (Brownell & Jutte, 2013), although they are vulnerable to detection and reporting biases. Consequently, in order to gain a better idea of the actual magnitude of this major social problem, the literature recommends relying on multiple sources of measurement. Regarding CPS data, three approaches are often used: 1) collect data from CPS practitioners via interview or questionnaire; 2) extract administrative data (containing no narratives reports); or 3) extract narrative reports which are later coded using a coding instrument. While measuring maltreatment from administrative data has undeniable advantages (e.g., possibility of obtaining a very large sample at low cost, possibility of obtaining a representative or even a population sample), it also has its drawbacks (e.g., quality of data at times variable, some dimensions of maltreatment impossible/difficult to obtain: severity, frequency, and chronicity). As for collecting data from practitioners, it is a challenging endeavor in the context of limited resources and heavy caseloads. The purpose of this article is to present the *Extended Modified Maltreatment Classification System* (EMMCS), an updated version of the *Modified Maltreatment Classification System (MMCS)*, as well as validation data for this new coding instrument for narrative reports. This update of the instrument will allow gathering more detailed and refined information on maltreatment cases, particularly in terms of severity and context.

1.1. Measuring maltreatment from CPS data

When a maltreatment situation is reported and screened in for investigation by CPS, the practitioners in charge gather information and draft a detailed investigation narrative report that is inserted in the child's electronic and/or paper file. Some of the information from this narrative is coded and registered in the large CPS administrative databases, but the complete written narrative report, however, is not. Access to these data, both the administrative data and the narrative reports, is a complex matter that necessitates specific expertise regarding the structure of the electronic and paper files of CPS agencies (Green et al., 2015; Huffhines et al., 2016; Witte, 2020). Narrative reports offer much richer information on the maltreatment events experienced by children, but are less commonly used by researchers because of their higher cost and the time required for accessing and coding, compared to administrative data extraction. Each narrative report must be coded individually by trained research assistants and, ideally, inter-rater agreement should be documented. Moreover, these reports contain personal data, rendering their manipulation more risky and complex.

In Québec as in many Western countries, CPS intervenes when a child's security or development is potentially jeopardized. Situations are generally reported by witnesses of maltreatment (e.g., police officers, teachers, extended family). Upon receiving such a report, a practitioner conducts a preliminary assessment based on the information already gathered but could visit on site in the case of an emergency. This assessment informs the decision to accept or reject (screened-in or out) the report and determines its degree of urgency. If the report is screened in, a separate practitioner conducts an in-depth investigation of the situation and drafts a narrative report of the investigation. Under the Québec Youth Protection Act, the grounds for CPS intervention are the following: 38a) abandonment; 38b1i) neglect of physical needs; 38b1ii) neglect of healthcare needs; 38b1iii) neglect of educational needs; 38b2) serious risk of neglect; 38c) psychological maltreatment; 38c1) exposure to domestic violence; 38d1) sexual abuse; 38d2) serious risk of sexual abuse; 38e1) physical abuse; 38e2) serious risk of physical abuse; and 38f) serious behavioral disturbances.

1.1.1. Narrative reports

The investigation narrative report provides a detailed and qualitative description of the child's and their parents' situation as it pertains to reported maltreatment. These reports, each about 5 to 20 pages long, are drafted by the CPS practitioner who investigates the situation. The narrative report of the investigation contains an array of detailed information: identity of the persons concerned and their sociodemographic characteristics, dates of events, descriptions of maltreatment events by different witnesses, evidence (corroboration of facts, medical exams in cases of physical or sexual abuse), services received by the family, data from the files of other institutions (e.g., hospitals, schools, local community service centers, police services), court records of the adults concerned, and more. Based on the information collected, the investigation can arrive at one of three conclusions: (1) allegations not confirmed/no evidence of maltreatment), (2) allegations substantiated with no ongoing protection concerns; or (3) allegations substantiated with ongoing protection concerns. In Quebec, practitioners also draft an "Orientation narrative report" only for the third category of situations and contain information such as degree of acknowledgement of situation by parents, degree of acknowledgement of impact of maltreatment (or risk thereof) on child, and parents' ability and willingness to redress the situation. These elements will inform how CPS should handle the case, that is, for how long (duration) a child and their family should be monitored and, more importantly, in what manner (type), namely, through voluntary measures or judicial action. The orientation report can also contain other information, including on family context, parent-child relationship, risk factors, child's specific needs, and family's degree of cooperation with CPS from the start.

1.1.2. Administrative data

Administrative data are quantitatively compiled and coded information collected in the course of the regular activities of the youth

protection system. These data include information such as types of youth protection service received (e.g., initial screening, investigation, management through voluntary or judicial means, placement history, parent-child workshops, stimulation workshops, etc.), decision and intervention dates, sociodemographic characteristics of the parties concerned (e.g., children, parents), conclusions of the investigation, and court decisions. These data are kept for internal management purposes. Administrative data are stored on a denominalized database that can be accessed by researchers, system managers and decision-makers upon justified request. These data are updated daily in each CPS agency, their entry is standardized, and they are checked systematically for consistency (for example, the sequence of dates and different steps of the process according to the conclusions at each step; Lavergne et al., 2005). In Québec (and possibly elsewhere as well), administrative data also have certain "technical" limitations regarding the maltreatment experienced by a child. For example, the investigation module allows entering only three grounds for CPS intervention (one "primary" and two "secondary") from the 12 possible grounds mentioned above. That is, while a narrative report might give five grounds for an investigation—38b1i) neglect of physical needs; 38b1ii) neglect of health needs; 38b1iii) neglect of educational needs; 38c) psychological maltreatment; and 38e1) physical abuse - only three of these would be attached to this investigation in the administrative database.

Aside from "technical" limitations of the sort, the few researchers who have compared maltreatment type rates derived from administrative data against those obtained by coding narrative reports on a standardized instrument have systematically found the former to be lower (Kim et al., 2017; Mennen et al., 2010; Negriff et al., 2014; Runyan et al., 2005; Stevens et al., 2015; Trickett et al., 2009). For example, in a sample of 303 children, Kim et al. (2017) found the rates derived from the most recent report of maltreatment with narratives coded on an instrument to be 39 % higher for physical abuse (24.8 % vs. 17.8 %), 52 % higher for sexual abuse (7.6 % vs. 5 %), 160 % higher for psychological maltreatment (25.8 % vs. 9.9 %), and 15 % higher for neglect (46.9 % vs. 40.9 %), compared with the rates obtained from administrative data.

In addition to maltreatment types and subtypes, there are many other dimensions of maltreatment that could potentially be important for the advancement of research in the field. These include severity, frequency, and chronicity. In a review of 338 articles in the field of maltreatment spanning a 10-year period, Jackson et al. (2019) found that, while nearly all the studies (99 %) had measured maltreatment types, few had measured severity (29 %), frequency (23 %), and chronicity (8 %). Some dimensions, such as severity, simply cannot be extracted from administrative data, and others, such as frequency and chronicity, can be only in a very fragmented manner (Proctor & Dubowitz, 2014). However, these dimensions can be measured by coding narratives on a standardized instrument.

1.1.3. MMCS

The instrument most commonly used in research to code maltreatment in narratives drafted by practitioners is the *Modified Maltreatment Classification System* (MMCS; English & Longscan, 1997). It has been used in >75 studies (Huffhines et al., 2016) and is considered the most complete instrument by experts in the field (Jackson et al., 2019). The MMCS is a revised and improved version of the *Maltreatment Classification System* (MCS; Barnett et al., 1993), which was updated for the purposes of the LONGSCAN longitudinal study in the United States. The MMCS covers six maltreatment types and various subtypes—100-physical abuse, 200-sexual abuse, 300-physical neglect, failure to provide, 400-physical neglect, lack of supervision, 500-emotional maltreatment, 600-moral/legal maltreatment, and 700-educational maltreatment—for a total of 25 codes corresponding to 25 maltreatment types/subtypes. Each subtype comprises levels of severity ranging from 1 to 5 (5 = maximum) and a description of each level. The number of events of maltreatment by subtype (frequency) is coded as well. The SPARK project team (Huffhines et al., 2016) added *file coding rules* to clarify the codes to apply in certain particular conditions and described a detailed two-step inter-rater reliability procedure. The first step consisted in identifying maltreatment events and the second, in coding these events on the other MMCS variables.

1.1.4. Reliability and validity of narrative report coding instruments

Bolger et al.'s (1998) study, using the MCS (the version preceding the MMCS), reported inter-rater reliability coefficients of 0.77 to 0.98 for severity of maltreatment, depending on the type of maltreatment on 25 % of his sample ($n = 35$). To our knowledge, the MMCS have not been the subject of a specific validation study, but partial reliability and convergent validity data are reported in some papers. The LONGSCAN project has been the subject of several dozen publications, and it is usually mentioned that the coders attained 90 % congruence with expert trainers prior to coding field records with the MMCS system (Appleyard et al., 2010). Some studies from this project add that after being trained, the coders obtained good overall agreement on the coding of type of maltreatment (all kappas >0.70, Merrick et al., 2008), but it is not exactly clear those numbers come from or if the detailed statistics are available. The study by Runyan et al. (2005), based on data from the LONCSCAN project, reports results on the convergence between three sources of maltreatment data for over 1000 narrative reports: 1) administrative data classification, 2) narrative reports coded with the MMCS by a research assistant and 3) narrative reports coded with the NIS-2 tool by a research assistant. The study, which classified each file according to a single type of maltreatment (the "Predominant type maltreatment"), reports a level of agreement (kappa) between the MMCS and the NIS-2 tool of 0.98 for physical abuse, 0.96 for sexual abuse, 0.74 for neglect and 0.72 for psychological maltreatment.

1.1.5. EMMCS

The MMCS needed to be revised, however, in order to account for the results of the last 25 years of research, primarily regarding psychological maltreatment. This is because, whereas the MMCS comprised only one general category—Emotional maltreatment—research had shown that various subtypes of emotional or psychological maltreatment were identifiable (Glaser, 2002, 2011; Hart et al., 2017) and numerous researchers had underscored the importance of refining the measures of psychological maltreatment (English, Thompson, & White, 2015, English, Thompson, White, & Wilson, 2015, Taillieu et al., 2016). Our update of the MMCS, which we named the *Extended Modified Maltreatment Classification System* (EMMCS; Monette, 2024), comprised the following changes: 1) new maltreatment subtypes (see Table 1); 2) overhaul of the Emotional maltreatment type and proposed clearly defined

psychological maltreatment subtypes consistent with the scientific literature in the field; 3) integration of the principles of coding developed by our team with those developed by Huffhines et al. (2016); 4) integration of the developmental periods of exposure to maltreatment and chronicity codes (English et al. (2005), 5) addition of a section on parental risk factors and child's adverse life events (other than maltreatment); 6) a proposed report coding form to provide an easy and practical approach to using the EMMCS; and 7) a proposed simplified inter-rater reliability procedure based on final variables rather than on each coded event. These changes are explained in detail in section 3 of the EMMCS manual (Monette, 2024).

1.2. Objectives

The objective of this study was to generate validation data on the EMMCS. More specifically, we sought to address two main research questions. **Question #1) Inter-rater reliability of the EMMCS:** Determine the degree of agreement between two research assistants for all of the dimensions measured by the EMMCS: severity by maltreatment type/subtype, frequency by maltreatment type/subtype, developmental periods of exposure to maltreatment, parental risk factors, and child's adverse life events. **Question #2) Convergent validity of the EMMCS:** Determine the convergent validity of the EMMCS by verifying the associations between this instrument: a) and another instrument for coding maltreatment from narratives and b) the child's functioning problems.

2. Method

2.1. Procedure

2.1.1. Sampling procedure

The ethics certificate and authorizations required for the project were first obtained. The research team then approached a Youth

Table 1
EMMCS and FEIQ-SF codes used to construct the seven maltreatment type variables to be compared (see Table 8).

EMMCS codes	FEIQ-SF codes
Physical abuse 101-Hit/kick to face/head/neck; 102-Hit/kick to torso; 103-Hit/kick to buttocks; 104-Hit/kick to limbs/extremities; 105-Pushing, shoving, throwing, pulling, dragging; 106-Choking/smothering; 107-Burns/scalding; 108-Shaking; 109-Other	1-Shake, push, grab or throw; 2-Hit with hand; 3-Punch, kick or bite; 4-Hit with object; 5-Choking, poisoning or stabbing; 6-Other physical abuse.
Sexual abuse/exploitation 201-Sexual abuse; 202-Sexual exploitation	7-Penetration; 8-Attempted penetration; 9-Oral sex; 10-Fondling; 11-Sex talk or images; 12-Voyeurism; 13-Exhibitionism; 14-Exploitation; 15-Other sexual abuse.
Physical neglect 301-FTP food; 302-FTP clothing; 303-FTP shelter; 304-FTP medical care; 305-FTP hygiene	20-Physical neglect; 21-Medical neglect; 22-Failure to provide psychological treatment
Psychological/educational neglect 401-FTP stimulation; 402-FTP routine/frame; 403-FTP responses to emotional needs; 405-FTP schooling	18-Failure to supervise or stimulate causing or at risk of causing developmental harm; 19-Permitting criminal behavior; 24-Educational neglect; 28-Inadequate nurturing or affection.
Neglect by lack of supervision 501-Risky/dangerous environment; 502-Inadequate substitute care; 503-Child left alone	16-Failure to supervise: physical harm; 17-Failure to supervise: sexual abuse.
Psychological maltreatment/exposure to potentially traumatic events 601-Hostility/terrorizing; 602-Denigration/rejection; 603-Unrealistic expectations/exploitation; 604-Psychological control; 605-Physical control/restriction; 606-Promotion of deviant behavior; 800-Exposure to potentially traumatic events	25-Terrorizing or threat of violence; 26-Verbal abuse, belittling or rejection; 27-Isolation or confinement; 29-Exploiting or corrupting behavior; 30. Instrumentalization of the child in a parental conflict; 34- Exposure to non-partner physical violence.
Exposure to domestic violence 700-Exposure to domestic violence	31-Direct witness to intimate partner physical violence; 32-Indirect exposure to intimate partner physical violence; 33-Exposure to intimate partner emotional violence.

Note. EMMCS, Extended Modified Maltreatment Classification System; FEIQ-SF, form used in the *Étude d'incidence québécoise sur les situations évaluées en protection de la jeunesse* - short form. EMMCS code 800 (Exposure to potentially traumatic events) was not included here, since no FEIQ-SF code sufficiently corresponded to this type of maltreatment.

Protection Center (single agency) in the province of Québec to conduct this research project. The files ($n = 240$) were selected from a larger pool of all substantiated case in 2021 and 2022 in the agency, with a view to obtaining minimal rates (5 %) of rarer maltreatment subtypes, according to EMMCS maltreatment subtypes (e.g., 603-Unrealistic expectations/exploitation, 606-Promotion of deviant behavior, 303-failure to provide shelter, 302-failure to provide clothing, etc.) in order to avoid the complete absence of any maltreatment subtype in the selected sample, which would have hindered certain statistical analyses. For this sampling procedure, the research team based themselves on the grounds for CPS intervention entered in administrative data (the 12 grounds for CPS intervention in Québec mentioned above and their numerous subtypes specified in administrative data) associated with the most recent investigation for a child.

2.1.2. Obtaining the investigation narrative reports

In the province of Quebec, the narrative reports (investigation and orientation) follow a template. For a concrete example, please see Appendix 2 of the EMMCS manual (Monette, 2024). In the participating Youth Protection Center (agency), a single report is drafted, combining the information from the investigation and the orientation processes. The narratives concerning the most recent investigation (only one per child) drafted by a practitioner were thus obtained for all the study cases and anonymized by research assistants. Two of the authors of this study (S. Monette and S. Hélie) are researchers for the CPS and thus have access to a secure computer repository to store and process data from this research project. The research assistants also worked from these secure electronic repositories. All research data were processed within the CPS secured computer system, making the possibility of leakage very low.

2.1.3. Coding narratives

For each child targeted, a research assistant then completed the Form used in the *Étude d'incidence québécoise sur les situations évaluées en protection de la jeunesse* - short form (FEIQ-SF) based on this investigation narrative. The FEIQ-SF (see details below) provides definitions of the types of maltreatment so that the person completing it can determine whether each type of maltreatment is present or not and also presents items relating to the child's functioning (e.g., externalizing/internalizing behavior, problematic sexual behavior, indicators of developmental delays, etc.). Moreover, the same narrative report was used by two other research assistants to complete the EMMCS, first independently and then by consensus. This yielded three versions of the EMMCS data: coder 1 version, coder 2 version, and consensus version. The two research assistants tasked with coding the narrative reports using the EMMCS were trained by coding files previously coded by consensus on the EMMCS in another research project. All files ($n = 240$) were coded by three different coders (FEIQ-SF coder, EMMCS coder 1, EMMCS coder 2).

2.2. Sample

The final sample was composed of the files of 240 targeted children (0 to 17 years old) whose situation was reported and screened in for investigation in 2021–2022 and designated as substantiated after investigation. The vast majority (97 %) of the children in our non-representative convenience sample were living with their biological parents at time of the investigation (see Table 2): 37 % with mother, 8 % with father, 39 % with both parents together, and 13 % with both parents separately in a shared custody arrangement. Mean age of mothers and fathers, respectively, was 34.98 years (SD = 7.59) and 39.45 years (SD = 8.82).

2.3. Instruments

2.3.1. Form used in the Étude d'incidence québécoise sur les situations évaluées en protection de la jeunesse - short form (FEIQ-SF)

First used in the 1998 QIS (Tourigny et al., 2002), the FEIQ was adapted from a survey form developed for the purposes of the *Canadian Incidence Study of Reported Child Abuse and Neglect* (CIS, Trocmé et al., 2001, 2005). In the CIS and the QIS, this form is

Table 2
Descriptive statistics on the sociodemographic variables of the children in the study ($n = 240$).

Sociodemographic variables	*N* (or *M*)	% (or *SD*)
Living environment of child at time of report screening		
Mother (primary custody)	89	37 %
Father (primary custody)	20	8 %
Both parents (living together)	93	39 %
Both parents (shared custody)	31	13 %
Regular foster care	2	1 %
Kinship foster care	2	1 %
Residential care	3	1 %
Age of mother	34,08	7.59
Age of father	39,45	8.82
Age of child	7,88	4,77
Sex of child = girl	116/240	48 %

Note. For age, data were available for 209 mothers and 146 fathers. Age was collected by age band: <16, 16–17, 18–21, 22–24, 25–30, 31–40, 41–50, 51–60, and >60. To calculate mean and SD, these bands were recoded using the following ages, respectively: 15, 16.5, 19.5, 23, 27, 35, 45, 55, and 65.

completed by the practitioner in charge of the investigation. The team behind the CIS validated the instrument through a variety of methods, including file reviews, discussion groups, and test-retest reliability (Fallon et al., 2013; Knoke et al., 2009). For example, test-rest reliability (after 4 weeks) of the (FEIQ-SF) completed by a practitioner was good to excellent (r all >0.61) for the four main types of maltreatment; good to excellent ($r > 0.66$) for 12/15 subtypes of maltreatment and good to excellent ($r > 0.66$) for 14/18 of child functioning problems. Inter-rater reliability was checked by comparing the project staff's ratings of case narratives on a sample of 220 cases (20 cases randomly selected from cases collected by each of the 11 site-based researchers). Percentage of agreement varied from a low of 82 % (Cohen's kappa = 0.58) between site-based research associates and central office researchers, to a high of 94 % agreement (Cohen's kappa = 0.87) between central office researchers (Trocmé et al., 2001). The FEIQ is an adapted French translation of the form used in the CIS. It is composed of some fifty questions describing the reported situation, the child, their parents, and their housing conditions. The short form (FEIQ-SF) used in our study comprises only items concerning types of maltreatment incident investigated and child functioning problems. The types of maltreatment incident investigated were rated on a 3-point Likert scale (2 = substantiated, 1 = suspected or 0 = unsubstantiated) and were reformatted as a binary variable (0 = unsubstantiated or suspected, 1 = substantiated), to match the format of the EMMCS. Child functioning problems were rated on a 3-point Likert scale (2 = confirmed, 1 = suspected or 0 = No) and comprise de the following items: 1-attentional problem/hyperactivity 2-aggression/behavior problem; 3-problem with authority/opposition/provocation; 4-depression/anxiety/withdrawal; 5-suicidal thoughts; 6-suicide attempt; 7-self-harming behavior; 8-inappropriate sexual behavior; 9-attachment issues; and 10-developmental delay. See Supplemental material S1 for a detailed description of the maltreatment types/subtypes and of the items regarding child functioning problems. It generally takes 10 to 15 min on average to complete the FEIQ-SF. There was no missing data on the FEIQ-SF.

2.3.2. Extended Modified Maltreatment Classification System (EMMCS)

This instrument covers the following variables: 1) Maltreatment type and subtype; 2) Severity. The EMMCS proposes a severity scale (Likert scale from 1 to 5, with supporting examples) for each maltreatment event coded. The final severity variables are maximum severity level by maltreatment type/subtype (e.g., a child reported having been slapped in the face a dozen times and at least once had to go to the hospital for stitches: code 101, severity = 4), as recommended in previous studies (Litrownik et al., 2005); 3) Frequency. The EMMCS measures the number of events by type/subtype (e.g., a child reported having been slapped in the face a dozen times: code 101, frequency = 12); 4) Periods of exposure. The EMMCS measures the periods of exposure to maltreatment according to the four developmental periods identified in English et al. (2005): 0 to 1½ years, 1½ to 3 years, 3 to 6 years, and 6 to 12 years. Another period ranging from 13 to 17 years was added in order to cover all the developmental period from 0 to 17; 5) Chronicity. A maltreatment chronicity score (1 to 5) is given based on the number of developmental periods of exposure to maltreatment and the contiguity of these periods of exposure to maltreatment, based on the works of English et al. (2005). The EMMCS was developed to code lifetime maltreatment using all (lifetime) investigation narratives. In the EMMCS, there is a definition of what constitute an event of maltreatment, and typically, some subtypes of maltreatment, that have a somewhat clearer beginning and ending (typically abuse event of higher severity) are coded as separate events. Some other subtypes of maltreatment, because they are only considered maltreatment in the context of repeated acts of omission or commission, are only coded once by investigation report. All this information is included in the EMMCS manual (Monette, 2024). For this specific project, we only coded (with EMMCS and FEIQ) the current episode of maltreatment, described in the investigation narrative, because we only extracted the most recent investigation report, not all lifetime reports, so all children only have one development period of exposure: the current period corresponding to their actual age. Also normally, in the "coding principles" section, the EMMCS takes into account other events of the past (e.g., in an investigation narrative, the mother reported that the child was physically abused by the father on five occasions three years earlier), given that the purpose of the instrument is to map the maltreatment events experienced by a child as completely as possible. For the purposes of our study, these past events, which were not addressed directly by the current CPS investigation, were exceptionally not coded in the EMMCS, just as they are not coded typically in the FEIQ-SF. It took each research assistant about one hour to code each case on the EMMCS, plus 15 min to establish consensus. The EMMCS also documents parental risk factors for maltreatment (e.g., alcohol/drug problems, mental health, intellectual disability, incarceration, parent's history of childhood maltreatment, etc.) and other adverse life events in the child (e.g., maternal alcohol or drug use during pregnancy, neonatal abstinence syndrome, conception by rape, experiencing the death of a parent or sibling, etc.). These variables are dichotomous (0 = absent, 1 = present). There was no missing data on the EMMCS.

2.4. Analysis plan

2.4.1. Inter-rater reliability of the EMMCS

Inter-rater agreement between the two research assistants was calculated for each EMMCS variable (page 1 of the form, appendix 1, Monette, 2024). Intra-class correlations were calculated for maximum severity (six-level ordinal variable: 0 to 5) and frequency of events (continuous variable) for each maltreatment type/subtype. Percent agreement and Cohen's kappas were calculated for the other EMMCS variables—all dichotomous—such as developmental periods of exposure to maltreatment, parental risk factors, and child's adverse life events. A kappa or an ICC above 0.74 was considered excellent, from 0.60 to 0.74 good, from 0.40 to 0.59 fair, and below 0.40 poor (Cicchetti, 1994). This classification (or slight variations of it; Altman, 1991; Fleiss, 1981; Landis & Koch, 1977) is the most often cited in literature.

2.4.2. Convergent validity of the EMMCS

The convergent validity of the EMMCS was verified two ways. First, to test for *narrow convergent validity* (two instruments

measuring the same constructs), maltreatment type variables from the EMMCS were compared against those from the FEIQ-SF. Dichotomous variables (0 = absence, 1 = presence) for seven maltreatment types were constructed for the EMMCS and the FEIQ-SF by combining the comparable subtypes of the two instruments (see Table 1) in order to run the analyses comparing the data generated by the two. The convergent validity of the EMMCS was verified by comparing the maltreatment types constructed from the EMMCS against those constructed form the FEIQ-SF. First, the degree of agreement between the two was evaluated using both Cohen's kappa and the rates obtained for each maltreatment type. McNemar's test for paired samples was used to verify whether the difference observed between the two rates was statistically significant. Second, to test for *broad convergent validity* (two instruments measuring different constructs that are usually correlated), eight maltreatment type (100 to 800) composite variables from the EMMCS (combining maximum severity and frequency, see below) were correlated with child's functioning problems from the FEIQ-SF. More specifically, five child's functioning problems were extracted from the FEIQ-SF: an internalizing behavior score, an externalizing behavior score, the item regarding inappropriate sexual behaviors (item 8), the item regarding attachment issues (item 9), and the item regarding signs of developmental delay (item 10). The internalizing and externalizing behavior scores were constructed on a combination of items (items 1 to 7) through a principal component analysis (PCA).

Table 3
Inter-rater reliability of the EMMCS: intra-class correlations (ICC) for maximum severity and frequency for each maltreatment type and subtype (n = 240).

Maltreatment types/subtype	ICC		Rate
	Maximum severity	Frequency	
100-Physical abuse	0.97	0.98	34 %
101-Hit/kick to face/head/neck	0.93	0.92	18 %
102-Hit/kick to torso	0.93	0.97	8 %
103-Hit/kick to buttocks	0.93	0.80	8 %
104-Hit/kick to limbs/extremities	0.99	0.99	18 %
105-Pushing, shoving, throwing, pulling, dragging	0.89	0.83	10 %
106-Choking/smothering	1.00	0.94	3 %
107-Burns/scalding	[a]	[a]	0 %
108-Shaking	1.00	1.00	1 %
109-Other	0.88	0.97	6 %
200-Sexual abuse/exploitation	0.98	1.00	9 %
201-Sexual abuse	0.98	1.00	8 %
202-Sexual exploitation	1.00	1.00	1 %
300-Physical neglect	0.95	0.95	34 %
301-FTP food	0.98	0.88	6 %
302-FTP clothing	0.97	0.95	3 %
303-FTP shelter	0.95	0.93	3 %
304-FTP medical	0.95	0.95	23 %
305-FTP hygiene	0.88	0.93	15 %
400-Psychological/educational neglect	0.88	0.97	47 %
401-FTP stimulation	0.99	0.96	10 %
402-FTP routine/frame	0.92	0.96	32 %
403-FTP responses to emotional needs	0.71	0.84	17 %
404-Abandonment/absence of parent	0.90	0.93	14 %
405-FTP schooling	1.00	0.98	11 %
500-Neglect by lack of supervision	0.93	0.99	28 %
501-Risky/dangerous environment	0.94	0.96	17 %
502-Inadequate substitute care	0.99	0.96	8 %
503-Child left alone	0.86	0.99	11 %
600-Psychological maltreatment	0.92	0.93	54 %
601-Hostility/terrorizing	0.94	0.94	28 %
602-Denigration/rejection	0.95	0.91	20 %
603-Unrealistic expectations/exploitation	0.91	0.76	12 %
604-Psychological control	0.84	0.76	17 %
605-Physical control/restriction	0.97	0.94	2 %
606-Promotion of deviant behavior	0.92	0.87	3 %
700-Exposure to domestic violence	0.90	0.91	29 %
800-Exposure to potentially traumatic events	0.88	0.95	31 %
Mean ICC	0.91	0.91	

Note. Rate, rate of children with this EMMCS maltreatment type or subtype (dichotomous variable), according to consensual coding by the two research assistants; FTP, failure to provide; ICC, intra-class correlation; EMMCS, Extended Modified Maltreatment Classification System. The rate for the three neglect types combined (300, 400 and 500) was 70 %.
All ICC were significant at $p < .001$.
[a] ICC not calculated because EMMCS results are a constant.

3. Results

3.1. Inter-rater reliability of the EMMCS

Table 3 gives the inter-rater reliability for maximum severity and frequency of event by maltreatment type/subtype. Intra-class correlations were available for 37 of the 38 types/subtypes because one subtype showed no variance for either of the two assistants. That is, the two assistants obtained a score of zero for the 240 files, which is why this maltreatment subtype is absent. For maximum severity, ICC for all of the types/subtypes proved excellent (0.71 to 1.00; mean = 0.91; all but one >0.74). For frequency of event, ICC for all of the types/subtypes proved excellent as well (0.76 to 1.00; mean = 0.91; all >0.74). Table 4 gives the inter-rater agreement on developmental periods of exposure. All the kappas proved excellent (0.97 to 1.00) for this dimension of maltreatment. Table 5 gives the inter-rater agreement on child's adverse life events. Kappas could be calculated only for 6 of 16 events because, for the other 10, the two assistants indicated the absence of such events. For the six events present, all kappas proved good to excellent (0.67 to 1.00), but the base rate of these variables is very low (0.80 % to 3.30 %). Table 6 gives the inter-rater agreement on parental risk factors (19 per parent). Kappas could be calculated for 12 variables for fathers and 10 for mothers because, for the other variables, the two assistants indicated an absence of variance (absence of the risk factor according to the two assistants). For the 13 paternal risk factors, all kappas proved good to excellent (0.89 to 1.00), except for "History of recurrent domestic violence" (0.00). For the 11 maternal risk factors, all kappas proved good to excellent as well (0.93 to 1.00). Overall, for nearly all of the variables generated by the EMMCS for which inter-rater agreement could be calculated (106/109, 97 %), agreement proved excellent.

3.2. Narrow convergent validity of the EMMCS

In order to obtain indicators of the narrow convergent validity of the EMMCS, we compared the maltreatment types obtained from the variables of the EMMCS (consensus of the two coders) against those obtained from the FEIQ-SF. Maltreatment types common to the two instruments were constructed from the maltreatment subtypes of each instrument (see Table 1) because the maltreatment types of these two instruments did not overlap sufficiently (with the exception of Physical abuse and Sexual abuse) to compare them directly. The EMMCS maltreatment type variables were dichotomized (no event = 0; presence of at least one event of this type = 1) in order to correspond to the FEIQ-SF metric. The degree of agreement (kappas and percent agreement) on the presence/absence of the common maltreatment types constructed specifically for this analysis, and the comparison of the rates (presence or absence of this maltreatment type) obtained with the two methods are presented in Table 7. The kappas proved good to excellent for five maltreatment types: Physical abuse ($k = 0.76$), Sexual abuse ($k = 0.90$), Physical neglect ($k = 0.68$); Neglect by lack of supervision ($k = 0.62$), and Exposure to domestic violence ($k = 0.63$). The kappas proved fair for Psychological/educational neglect ($k = 0.51$) and Psychological maltreatment/EPTE ($k = 0.55$). Where differences in maltreatment rates are concerned, the EMMCS generated slightly higher rates for Physical abuse (35 % vs. 30 %, 1.2×), Physical neglect (34 % vs 27 %, 1.3×), Psychological maltreatment/EPTE (64 % vs 52 %, 1.2×), and Exposure to domestic violence (29 % vs 22 %, 1.3×) and equivalent rates for Sexual abuse, Psychological/educational neglect, and Neglect by lack of supervision.

3.3. Broad convergent validity of the EMMCS

Next, to determine the EMMCS's broad convergent validity, maltreatment type variables from the EMMCS were correlated with the clinical indicators for the targeted child derived from the FEIQ-SF. For these analyses, we combined the maximum severity scores (possible range: 0 to 5) and the frequency scores recoded as an ordinal variable (0 event = 0, 1–2 events = 1, 3–4 events = 2, 5–6 events = 3, 7–8 events = 4, and 9+ events = 5) for each EMMCS maltreatment type. Thus, each of the eight maltreatment types (from 100 to 800) of the EMMCS could obtain a possible score of 0 to 10. The descriptive statistics for these composite maltreatment scores

Table 4
Inter-rater reliability of the EMMCS: Cohen's kappa for developmental periods of maltreatment exposure ($n = 240$).

Developmental period of exposure	Kappa	Rate
0 to 1.5 YO	1.00	9 %
1.5 to 3 YO	0.98	8 %
3 to 6 YO	0.98	18 %
6 to 12 YO	0.97	42 %
12 to 18 YO	0.99	23 %
Chronicity code	n.a.	
Mean kappa	0.98	

Note. EMMCS, Extended Modified Maltreatment Classification System. The chronicity code can be used only in studies examining lifetime narratives and lifetime maltreatment events within each narrative, which was not the case in this study. Rate, rate of children exposed to maltreatment in this sample on the EMMCS (dichotomous variable), according to consensual coding by the two research assistants.
All kappas were significant at $p < .001$.

Table 5
Inter-rater reliability of the EMMCS: Cohen's kappa for child's other adverse life events ($n = 240$).

Child's other adverse life events	Kappa	% agree.	Rate
Abuse-related pregnancy (PRE)	[a]	100 %	0 %
Maternal denial of pregnancy (DEN)	0.67		0.80 %
Drugs during pregnancy (DRU)	[a]	100 %	0 %
Alcohol during pregnancy (ALC)	[a]	100 %	0 %
Born with drug withdrawal symptoms (WIT)	[a]	100 %	0 %
Refugee status (REF)	[a]	100 %	0 %
Child's serious accident (ACC)	[a]	100 %	0 %
Child's serious illness (ILL)	1.00		1.30 %
Exposed to serious accident or illness of a parent (PAI)	[a]	100 %	0 %
Death of a parent/sibling (DEA)	0.86		1,30 %
Exposed to natural disaster (DIS)	[a]	100 %	0 %
Exposed to war, terrorism, political violence (WAR)	1.00		0.40 %
Father never involved (FIN)	0.94		3.30 %
Mother never involved (MIN)	0.86		1.70 %
Mean kappa	0.90		

Note. EMMCS, Extended Modified Maltreatment Classification System; Rate, rate of children with this risk factor on the EMMCS (dichotomous variable), according to consensual coding by the two research assistants. All kappas were significant at $p < .001$.
[a] Kappa not calculated because EMMCS results are a constant.

Table 6
Inter-rater reliability of the EMMCS: Cohen's kappa for Parental risk factors ($n = 240$).

Parental risk factors	Mother		Father	
	Kappa	Rate	Kappa	Rate
Significant financial problem (POV)	0.93	7 %	1.00	3 %
Significant physical health problem (HEA)	1.00	3 %	0.89	2 %
Intellectual disability (IDD)	1.00	2 %	[a]	0 %
Mental health problem (MHP)	0.98	25 %	0.96	18 %
Hospitalized in psychiatry against his/her will (HOS)	[a]	0 %	[a]	0 %
Alcohol/drug abuse problem (ADD)	0.97	17 %	1.00	19 %
History of recurrent domestic violence (RDV)	[a]	0 %	0.00	2 %
History of sexual abuse of adults (SAA)	[a]	0 %	[a]	0 %
History of sexual abuse of children (SAC)	[a]	0 %	[a]	0 %
Perpetrator of non-violent crime (PNC)	1.00	1 %	1.00	4 %
Perpetrator of violent crime (PVC)	[a]	0 %	1.00	5 %
Incarceration history (INC)	[a]	0 %	0.92	5 %
Involvement of CPS during childhood (CPS)	1.00	6 %	1.00	1 %
Placed by the CPS during childhood (PLA)	1.00	3 %	1.00	1 %
Experience of maltreatment during childhood (MAL)	1.00	7 %	1.00	7 %
History of prostitution (PRO)	[a]	0 %	[a]	0 %
Homeless (HOM)	[a]	0 %	[a]	0 %
Socially isolated (ISO)	1.00	2 %	1.00	3 %
Parent was a minor (ADO)	[a]	0 %	[a]	0 %
Mean kappa	0.99		0.91	

Note. EMMCS, Extended Modified Maltreatment Classification System; Rate, rate of children with this risk factor on the EMMCS (dichotomous variable), according to consensual coding by the two research assistants.
All kappas were significant at $p < .001$.
[a] Kappa not calculated because EMMCS results are a constant (rate of 0 %, no record comprised this variable, according to the two research assistants).

are presented in Table 8.

These combined severity-frequency scores for each maltreatment type were correlated with five indicators of child's functioning problems from the FEIQ-SF: an internalizing behavior score, an externalizing behavior score, the item concerning inappropriate sexual behavior (item 8, range 0–2), the item concerning attachment issues (item 9, range 0–2), and the item concerning signs of developmental delay (item 10, range 0–2). The internalizing and externalizing behavior scores were obtained by regression following a PCA of the seven items concerning these behaviors (items 1 to 7). This PCA (KMO = 0.63; Bartlett's test of sphericity, chi-square (21) = 376.52, $p < .001$) yielded a two-factor solution (through both a visual inspection of the screeplot and the Kaiser rule of EG > 1) explaining 57 % of the variance in these items. An oblimin rotation was maintained on account of the correlation expected between the two factors ($r = 0.23$, $p < .001$). The correlations between the severity-frequency scores for each EMMCS maltreatment type and the five FEIQ-SF clinical indicators are also presented in Table 8.

Unexpectedly, the Physical abuse score and the Neglect by lack of supervision score proved correlated with no clinical indicator. The Sexual abuse score proved correlated with child's inappropriate sexual behavior. The Physical neglect score and the Psychological/

Table 7
Narrow convergent validity of the EMMCS: Kappa and percent agreement with the FEIQ maltreatment types ($n = 240$).

Maltreatment type variables constructed from EMMCS and FEIQ codes (see Table 2)	Kappa	Percent agreement	EMMCS rate	FEIQ-SF rate	McNemar (*p*-value)	Difference
Physical abuse	0.76	90 %	35 %	30 %	0.043	1.2 EMMCS
Sexual abuse	0.90	98 %	9 %	10 %	n.s.	
Physical neglect	0.68	86 %	34 %	27 %	0.005	1.3 EMMCS
Psychological/educational neglect	0.51	78 %	50 %	56 %	n.s.	
Neglect by lack of supervision	0.62	86 %	28 %	25 %	n.s.	
Psychological maltreatment/EPTE	0.55	78 %	64 %	52 %	< 0.001	1.2 EMMCS
Exposure to domestic violence	0.63	86 %	29 %	22 %	0.003	1.3 EMMCS
Mean kappa	0.66					

Notes. All kappas were significant at $p < .001$.
EMMCS, Extended Modified Maltreatment Classification System; FEIQ-SF, Form used in the Étude d'incidence québécoise sur les situations évaluées en protection de la jeunesse - short form; EPTE, exposure to potentially traumatic events; difference, EMMCS rate/FEIQ rate.

Table 8
Broad convergent validity of the EMMCS: Correlation with the FEIQ-SF child's problems ($n = 240$).

Combined score of maximum severity and frequency by maltreatment type on the EMMCS	EMMCS descriptives			Correlations with child's problems on the FEIQ-SF				
	M	*SD*	Range	INT	EXT	ATT	DEV	SX
100-Physical abuse (sev-fre)	1.28	2.06	0–8	−0.08	0.08	0.02	0.09	−0.06
200-Sexual abuse (sev-fre)	0.58	1.92	0–9	0.24**	−0.03	0.02	−0.08	0.19**
300-Physical neglect (sev-fre)	1.18	1.78	0–6	0.06	−0.04	0.14*	0.24**	−0.06
400-Psychological/educational neglect (sev-fre)	2.06	2.26	0–8	0.12	0.15*	0.15*	0.21**	−0.02
500-Neglect by lack of supervision (sev-fre)	1.16	2.08	0–10	−0.09	0.01	0.05	0.08	−0.12
600-Psychological maltreatment (sev-fre)	2.06	2.27	0–10	0.15*	0.21**	0.06	−0.05	−0.01
700- Exposure to domestic violence (sev-fre)	0.86	1.42	0–5	−0.15*	−0.08	−0.06	−0.09	−0.06
800- Exposure to potentially traumatic events (sev-fre)	1.10	1.76	0–7	−0.15*	−0.14*	−0.06	−0.14*	−0.02

Note. EMMCS, Extended Modified Maltreatment Classification System; FEIQ-SF, form used in the Étude d'incidence québécoise sur les situations évaluées en protection de la jeunesse - short form. The scores for each maltreatment type on the EMMCS combine here maximum severity by type (0 to 5) and frequency (recoded as an ordinal variable ranging from 0 to 5), for a total score ranging from 0 to 10; INT, internalizing behaviors (factor analysis Z-score); EXT, externalizing behaviors (factor analysis Z-score obtained by regression following PCA); ATT, attachment issues; DEV, developmental delay; SX, inappropriate sexual behaviors.
* $p < .05$.
** $p < .01$.

educational neglect score proved correlated with attachment issues and with signs of developmental delay. The Psychological maltreatment score proved correlated with internalizing and externalizing behaviors. Also unexpectedly, the Exposure to domestic violence score and the Exposure to potentially traumatic events score proved negatively correlated with some of the child's functioning problems.

4. Discussion

The two main objectives of this article were to present data on the inter-rater reliability and convergent validity of the EMMCS, an updated version of the MMCS. Regarding inter-rater reliability, the ICC for maximum severity and frequency of events by maltreatment type and subtype were all excellent (ICC > 0.74), except for maximum severity for the "Failure to provide response to emotional needs" subtype, which was good. It is surprising to note that even for maltreatment types and subtypes usually harder to code reliably (e.g., Psychological maltreatment, Psychological/educational neglect) on account of their less tangible or observable nature, the inter-rater agreement was excellent. These results could be explained by the EMMCS definitions, which are very exhaustive and precise, and which leave little room for ambiguity. The ICC for developmental period of exposure, too, were all excellent (kappa >0.98). We must bear in mind, however, that in this study only one investigation narrative was coded per child and also, that past events were not coded for the sake of consistency with the other instrument used (FEIQ-SF). It is possible that inter-rater agreement would be a little weaker in a more complex context, for example, in a research project where lifetime investigation narratives were extracted and coded, along with past events described in those narrative reports. Where child's adverse life events are concerned, while inter-rater agreement was good to excellent for the six variables available, it should be noted, however, that the rates of occurrence were very low for all these variables (0.8 % to 3.3 %). Also, we were not able to calculate the inter-rater agreement for the majority of these (8/14) because the narratives did not indicate the presence of these events for each child. Where parental risk factors are concerned, nearly all the variables showed excellent inter-rater agreement (kappa >0.89), with the exception of "History of recurrent domestic violence of the

father" (kappa = 0.00). Here, too, it should be noted that the rates of occurrence were rather low for most of the variables, with the exception of "Mental health problem" (mother, 25 %; father, 18 %) and "Alcohol/drug abuse problem" (mother, 17 %; father, 19 %). As was the case for child's adverse life events, we were not able to calculate inter-rater agreement for numerous parental risk factors (8/19 for mother, 6/19 for father) because the narratives did not indicate the presence of these events for any child. It is highly possible that this information on adverse life events and on parental risk factors is not systematically collected by practitioners who investigate child maltreatment, though some practitioners sometimes mention these in their narratives. Consequently, the data from this section of the EMMCS should be used with great caution. More research is needed to determine the utility of the variables in this section.

The takeaway here is that nearly all (97 %) the variables generated by the EMMCS, namely, maximum severity by type/subtype, frequency of events by type/subtype, developmental period of exposure, parental risk factors, and child's adverse life events, showed inter-rater agreement indicators deemed excellent (kappa or ICC > 0.74). These results suggest that the EMMCS demonstrates excellent inter-rater reliability in the context of a study examining the investigation narratives of youths 0 to 17 years old. It should be noted that the research assistants were graduate students who had been trained to use the EMMCS. One of the assistants had youth protection experience as a CPS practitioner and the other assistant had previously coded at least one hundred files on the EMMCS as part of another research project. It is possible, therefore, that the high level of experience and training of the research assistants involved in our project contributed to the instrument's high degree of inter-rater agreement. It is also possible that selecting only substantiated maltreatment investigation narrative reports resulted in narratives containing more information and being more detailed, which could have contributed to the high inter-rater agreement between the two EMMCS coders. It would be necessary to verify whether these levels of inter-rater agreement are maintained for unsubstantiated reports. These results showing good levels of inter-rater agreement are, however, consistent with the rare studies having reported this type of data for the MCS and the MMCS.

Concerning the narrow convergent validity of the EMMCS, overall, the EMMCS maltreatment types showed either good (5/7 types) or fair (2/7 types) agreement with the FEIQ-SF. It should be noted here that "Psychological/educational neglect" and "Psychological maltreatment/Exposure to potentially traumatic events" were the maltreatment types that presented the lowest agreement between the EMMCS and the FEIQ-SF (kappa = 0.55 and 0.51, respectively). Various reasons could explain these two lower levels of agreement. On the one hand, these maltreatment types are less tangible and concrete than other types are. Also, the EMMCS and FEIQ-SF maltreatment subtypes on which were constructed these comparable maltreatment type variables between the two instruments present certain differences in their definitions. For example, FEIQ-SF subtype 18 (Failure to supervise or stimulate) used to construct the "Psychological/educational neglect" type in Table 7 also covers "*situations where the caregiver tolerates inappropriate behavior from a person living in the same living environment as the child*". In the EMMCS, this sort of situation would probably be coded 501-Dangerous environment or 800- Exposure to potentially traumatic events depending on the "inappropriate behavior". However, these two EMMCS subtypes were not used to define the "Psychological/educational neglect" type in Table 7. Along the same line, FEIQ-SF subtype 24 (Educational neglect) used to construct the "Psychological/educational neglect" type in Table 7 also covered "*If the child is experiencing mental, emotional or developmental problems associated with school, and treatment is offered, but the caregiver does not cooperate with the treatment, classify the case under failure to provide treatment as well*", whereas in the EMMCS this type of event would be coded only in the "304-Failure to provide medical care" subtype. Again, however, this EMMCS subtype was not used to define the "Psychological/educational neglect" type in Table 7. These results showing good levels of correspondence for an instrument like the EMMCS with another less detailed coding instrument, also completed by a research assistant, are consistent with the results of other studies such as Runyan et al. (2005).

Also, maltreatment rates were slightly higher (1.2 to 1.3× higher) with the EMMCS for more than half (4/7) of the maltreatment type variables common to the EMMCS and the FEIQ. Normally, the EMMCS codes events reported in the present but also those that occurred in the past (e.g., the mother reported that the child was beaten by the father four years earlier) because the instrument was designed to document lifetime maltreatment. This is not the case with the FEIQ-SF, which was designed to document the current reported maltreatment event being investigated. However, as this feature specific to the EMMCS was deactivated for the specific purposes of our study, it cannot explain the higher rates for certain EMMCS maltreatment types, compared with the FEIQ-SF. The most likely explanation to our eyes is that the descriptions and examples of parental maltreatment behaviors for the maltreatment subtypes in the le EMMCS are very detailed and often multiple pages long, whereas the definitions in the FEIQ-SF are much shorter. This could be why research assistants reported a little more maltreatment with the EMMCS.

Regarding the broad convergent validity of the EMMCS, the combined severity-frequency scores by EMMCS maltreatment type showed some correlations with the indicators of child's functioning problems coded on the FEIQ-SF. Among these, we should note the presence of a correlation between: 1) the 200-Sexual abuse score and child's internalizing behaviors and inappropriate sexual behavior; 2) the 300-Physical neglect and 400-Psychological/educational neglect scores and attachment issues and signs of developmental delay; and 3) the 600-Psychological maltreatment score and internalizing and externalizing behaviors. The 700-Exposure to domestic violence and 800-Exposure to potentially traumatic events scores correlated negatively with certain indicators of child's problems. This was not expected. This result could be explained by the type of sample used in the study. The sample was composed entirely of children who were screened in for investigation and for whom the reported maltreatment was found to be substantiated. This means that these children were for the most part genuine victims of maltreatment. In this sample of victimized children, it is possible that the children who primarily experienced maltreatment that could be qualified as "indirect" (700 and 800) were, within this specific sample, those who manifested the least problems in terms of functioning. This could explain the negative correlations.

In the introduction, we presented studies that examined the rates of maltreatment generated by administrative data vs. coding of narrative reports, and these studies consistently show that administrative data generate lower rates of maltreatment. One question remains whether administrative data underestimates maltreatment or whether narrative report coding instruments overestimate maltreatment. One way to address this issue would be to compare the predictive power of these two sources of maltreatment data

regarding developmental outcomes in children. One of the only studies on this topic showed contradictory results, that is, indicators of sexual abuse and physical abuse generated by the MMCS were better predictors of child outcomes compared to those generated by administrative data, while for neglect, the opposite was observed (Runyan et al., 2005).

Our study presents some limitations. First, only one research assistant completed the FEIQ-SF. Consequently, we do not know the degree to which the inter-rater agreement on the FEIQ-SF variables is satisfactory. If the variables had been coded by two independent research assistants and differences had been settled by consensus, the degree of agreement with the EMMCS data might have been a bit different. Second, despite our efforts to construct comparable maltreatment types between the EMMCS and the FEIQ-SF, because of some differences between the subtypes that were used to construct the maltreatment type variables in Table 7, some types were not completely equivalent or comparable. Consequently, it is not exactly clear whether the lower inter-method agreement indices for two maltreatment types are the reflection of a more modest degree of convergent validity or whether this was caused by differences in how two instruments define similar maltreatment subtypes. Also, this study focused on a convenience sample, recruited from a single CPS agency in the province of Quebec, so the generalization of the results to other populations is limited. Finally, a large number of statistical analyses were conducted in this study and given the alpha threshold of 0.05, it is possible that some significant results were due to chance.

Overall, the results of our study indicate that the EMMCS possesses excellent inter-rater reliability and good convergent validity. These promising results underscore the potential of the EMMCS to become a reference in the field. However, some of the instrument's elements, such as the two new maltreatment types—Psychological/educational neglect and Psychological maltreatment—as well as parental risk factors and child's adverse life events stand to benefit from more research. Paying special attention to these dimensions might not only strengthen their psychometric properties but also improve our understanding of the underlying dynamics of maltreatment and thus make it possible to offer more tailored and effective intervention.

CRediT authorship contribution statement

Sebastien Monette: Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Sonia Hélie:** Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Tonino Esposito:** Writing – review & editing, Validation, Methodology, Investigation, Funding acquisition. **Nico Trocmé:** Writing – review & editing, Validation, Methodology, Investigation, Funding acquisition. **Delphine Collin-Vézina:** Writing – review & editing, Validation, Methodology, Investigation, Funding acquisition.

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Declaration of competing interest

The first author is the author of the EMMCS.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.chiabu.2025.107587.

Data availability

The authors do not have permission to share data.

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