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Child Maltreatment Severity Questionnaire (MSQ) for Professionals: Development, validity, and reliability evidence

Abstract

This paper presents the development and validation of the Child Maltreatment Severity Questionnaire (MSQ), aiming to contribute to increase the quality and efficiency of evaluation processes in the Child Protection System (CPS). To obtain a valid and reliable instrument, a set of studies was developed: Study 1- Based on two previous studies, the questionnaire was developed and the severity level of items within maltreatment subtypes was assigned by 93 professionals from the welfare and CPS system. Consensus about the severity levels was assessed and described in terms of within-item reliability rankings; Study 2 - The MSQ was filled out for 253 children and adolescents referred to the CPS. To assure that the items within different subtypes of maltreatment were homogenous and had internal consistency, a reliability analysis was performed; Study 3 – The MSQ was filled out for 1000 children and adolescents referred to the CPS. This study involved testing validity evidence through an exploratory and a confirmatory factor analysis. We also analyzed the internal consistency, sensibility (i.e., sex and age differences) and concurrent validity of the MSQ. Findings support the adequacy and reliability of the MSQ to be used by CPS professionals in evaluating child maltreatment.

Keywords: Assessment; Maltreatment Severity; Children and youth; Child Protection Services

Introduction

Although it is considered that the official estimates understate the true incidence of child maltreatment in the family context (Sedlak et al., 2010), the phenomenon affects millions of children and young people, negatively affecting their physical, cognitive, emotional and social development (Fallon, Trocmé, Fluke, MacLaurin, Tonmyr, & Yuan, 2010). Maltreatment is, thus, a serious social problem that requires strong efforts to implement intervention strategies. The success of these strategies depends, among other factors, on the capacity of professionals working in the Child Protection System (CPS) to accurately identify and assess maltreatment suspicions, through assessment tools that rely on validity and reliability evidence.

It is well-recognized that complete and comprehensive evaluations should be developed for all suspected maltreatment cases, whenever possible (e.g., Kugler, Guastaferro, Shenk, Beal, Zadzora, & Noll, 2019). Suspected maltreatment cases are usually first referred to local child welfare services. After a cursory screening, these services refer the cases to the CPS for further investigation. Based on the result of that investigation, CPS classify suspected cases as either “substantiated” or “unsubstantiated”. Even if the majority of child welfare reports are not substantiated (Kugler et al., 2019), these non-substantiated cases may show similar adversities that, although short of the substantiation criteria, put them at risk for further maltreatment and, thus, for problematic developmental outcomes (Kohl, Jonson-Reid, & Drake, 2009; Hussey et al., 2005; Kugler et al., 2019). However, there is emerging consensus that maltreatment is a complex construct requiring reliable and valid measurement tools, developed through advanced statistical techniques (Brumley, Brumley, & Jaffee, 2019; English, Bangdiwala, & Runyan, 2005; Gabrielli, & Jackson, 2019; Gabrielli, Jackson, Tunno, & Hambrick, 2017; Jackson, Gabrielli, Fleming, Tunno, & Makanui, 2014). As such, we aim to describe the development of an instrument to assess child maltreatment,

specifically designed to be used by professionals in CPS services. Ultimately, we aim to contribute to improve decision-making processes regarding the CPS referred cases to different responses in both the community (e.g., preventive or early intervention programs) and the CPS services (e.g., maltreatment reduction interventions; child removal).

Child maltreatment definition

Child maltreatment is a general concept used to describe physical, sexual, and emotional abuse, as well as all types of neglect (U.S.A. Department of Health & Human Services [DHHS], 2013). Child maltreatment broadly means any act of commission (i.e., to do something) and/or omission (failure to act) by a parent or caregiver, which results in serious physical or emotional harm, sexual abuse or exploitation, or has the potential to cause harm to a child (McCoy & Keen, 2013). Most countries have provided legal standards for definitions of maltreatment (e.g., blind for review, 2016; Jackson, McGuire, Tunno, & Makanui, 2019; Stowman & Donohue, 2005). These definitions, however, may entail a set of problems: a) they provide only minimum standards and use broad terms; b) they do not define subtypes of maltreatment (Portwood, 1998; Runyan & English, 2006); c) some of them may address endangerment and harm, whereas others only address harm (Fallon et al., 2010; Slack et al., 2003); d) when these definitions are based on state statutes they also vary due to interpretation of vague language, particularly about setting boundaries (Barnett, Manly, & Cicchetti, 1993; blind for review, 2016; Portwood, 1998); and, e) the criteria to what act(s) constitute maltreatment are somewhat different from state to state (Jackson et al., 2019). In sum, different definitions for child maltreatment exist in different contexts, but these delimitations are often not detailed enough for research, and definitions that are developed for research purposes often do not generalize to non-research settings (Slack et al., 2003).

The complexity in the definition of child maltreatment is evident. Research has shown that there is an inconsistency among different child welfare professionals (e.g., King & Scott, 2014), as well as among CPS professionals, regarding the evaluation of such cases (e.g., Arruabarrena & De Paúl, 2011; 2012; blind for review, 2016; Jackson et al., 2019). This inconsistency is higher when child maltreatment is difficult to observe and/or when there is a lack of immediate, clear, and observable damages to the child (e.g., Dubowitz et al., 2005; Gabrielli et al., 2017; Korbin, Coulton, Lindstrom-Ufuti, & Spilsbury, 2000), such as in emotional abuse (Jackson et al., 2019). That is why in many countries the protection practices have been criticized for their unsystematic assessment, leading to inconsistent service delivery and insufficient case planning and decision-making (e.g., Benbenishty et al., 2015). Among the several distinct factors that have been identified as related to biased evaluations and decision processes, the nature of maltreatment (e.g., type, pattern, risk of harm, severity), the lack of professional training and guidelines of what constitutes maltreatment, and individual evaluator characteristics (e.g., profession, experience, skills, values, comfort with casework, orientation to protection of the child versus preservation of family) (e.g., Benbenishty et al., 2015; blind for review, 2015) have important implications on professionals' decision making processes regarding child protection social and legal measures.

Finally, another underlying challenge in the process of defining maltreatment revolves around the cultural and geographic variability in parenting practices and child upbringing (e.g. Fallon et al., 2010; Prevoo, Tamis-LeMonda, 2017; Tran, Alink, Van Berkel, & Van Ijzendoorn, 2017). Indeed, the most relevant research in this field has been conducted in the United States and Canada (c.f. Herrenkohl, 2005; Jackson et al., 2019), and there are very few studies in Europe and Asia differentiating and describing levels of maltreatment severity (e.g. Arruabarrena & De Paúl, 2012; Blind for review, 2016, Tran et al., 2017). Therefore, the adoption of definitions from different socio-cultural and legal contexts may result in

judgments and interpretations of maltreatment cases that are out of line with their socio-cultural reality (e.g., Fallon et al., 2010; Tran et al., 2017). In support of this argument, the results obtained in a previous study (Blind for review, 2016), comparing maltreatment definitions and severity indicators with those of other scales of severity (e.g., Barnett et al., 1993; English, Bangdiwala, et al., 2005), illustrated the importance of taking into account cultural values and legal status in defining abuse and neglect, not only in terms of content, but also in describing the severity of its different indicators. That previous study revealed that, although the types of maltreatment are highly similar to those defined by Barnett et al., (1993) and English, Bangdiwala, et al. (2005) in case reports, the indicators of most subtypes do not have the same degree of specificity and severity. These findings indicate that there are social, cultural and legal specificities across different countries, regarding the assessment of maltreatment indicators and severity (e.g., Dubowitz et al, 2005; Korbin et al., 2000).

Child maltreatment assessment

Literature reviews have made many significant contributions to the measurement techniques and the development and validation of instruments to assess types and sub-types of maltreatment occurrence, frequency, chronicity and severity (see for example, Gabrielli, & Jackson, 2019; Jackson, et al., 2019; Rivera, Fincham, & Bray, 2018; Stowman & Donohue, 2005) since the special issue on methods and measurement published in *Child Abuse and Neglect* in 2005 (English, Bangdiwala, et al., 2005; English, Upadhyaya, et al., 2005).

Different measures focused on child maltreatment have emerged in the literature, namely, CPS risk assessment models (Munro, 2011), measures that focus on the observation of the household conditions or on parent-child interactions (e.g., Franke, Christie, Ho & Du, 2013), children or adult self-report measures of maltreatment (e.g., Jackson et al., 2014; Runyan et al., 2009), and subscales of measures that do not primarily assess maltreatment (e.g., risk assessment; family assessment) (Franke, Christie, Ho & Du, 2013; Stowman & Donohue,

2005). However, there are a set of problems and disadvantages in some of these types of measures. Although risk assessment may be used to inform decision-making processes, these measures focus primarily on prediction of whether or not a child will be maltreated at some future time (Pecora, 1991). Approaches using self-reports and observational measures may yield socially desirable responses and recall bias concerns (e.g., blind for review, 2016; Dubowitz et al., 2005; Jackson, et al., 2019). Besides, available instruments tend to be specifically designed to evaluate merely specific types of maltreatment practices, for instance neglect (e.g., Ontario Child Neglect Index – Trocmé, 1996) or psychological maltreatment (e.g., Brassard, Hart, & Hardy, 1993), with scarce exceptions focused on a multidimensional perspective (e.g., Parent-Child Conflict Tactics Scales; Strauss, Hamby, & Warren, 2003). Thus, most instruments do not allow assessing the co-occurrence of different maltreatment sub-types, which is often the case (Herrenkohl, 2005; Rivera et al., 2018; Van Scoyoc, Wilen, Daderko, & Miyamoto, 2015).

Thus, despite the growing number of instruments and models on child maltreatment, the scarcity of behaviorally anchored scales, reflecting what caretakers did (e.g., hit, slapped) and how it injured the child, that are pertinent to professionals' evaluation of child maltreatment is still noticeable. In addition, in many cases, this type of tools is constrained to unstandardized processes, more driven by practice than by empirical research (Pecora, 1991; Stowman, & Donohue, 2005).

For all these reasons, research on child maltreatment tend to be based on a categorical approach to maltreatment experiences (Ahmadkhaniha, Shariat, Torkaman-Nejad, & Moghadam, 2007; Jackson, et al., 2019), or considering the information from case file reports (Modified Maltreatment Classification System (MMCS); English, Bangdiwala, et al., 2005) or reported cases for suspected abuse or neglect (e.g., Fallon et al., 2010). While case files may not be subject to recall bias, CPS data from case file reports have their own limitations.

Specifically, CPS reports capture only a fraction of the maltreatment experienced and reported cases do not accurately and completely reflect the occurrence of all the problems underestimating the number and types of maltreatment. Actually, reports to CPS probably reflect more severe forms of maltreatment, as less severe experiences are not as likely to be reported (Fallon et al., 2010; Jackson et al., 2014). That is, data in the case file is often limited to what could be substantiated or proven by state authorities (Jackson et al., 2019). In addition, the information in case file reports could be mainly retrospective, with the inherent need to have a more real-time assessment of child currently or recently involved in CPS (e.g., Jackson et al., 2014; Shaffer, Huston & Egeland, 2008). Also, there is great variation in the existing case file information, and enormous variability in how the professionals record information, even within the same agency (e.g., blind for review, 2006; Fallon et al., 2010). Finally, it is important to note that although some authors have made an effort to examine the concordance between measures of self-report and case file reports it was not clear if there was a pattern across studies. Indeed, some studies have documented the inconsistency between self-report and case file data (e.g., Cho & Jackson, 2016; Hambrick, Tunno, Gabrielli, Jackson, & Belz, 2014) suggesting that they are not likely to agree (Jackson et al., 2019).

As factors leading to inconsistency in CPS assessment are systemic, measures to increase consistency in assessment should be developed. Specifically, structured or standardized tools aimed to help caseworkers' evaluations could contribute to effective decisions. If professionals do not use such a structured system of evaluation, including a direct collection of information, many of the current evaluation problems will persist in this research area. In sum, the absence of validated structured measures that allow the severity assessment of multiple types of child maltreatment by professionals (Hovdestad, Campeau, Potter, Tommy, 2015) is the main concern of this work. Actually, psychometrically sound

instruments to assess child/youth maltreatment are needed as, to our best knowledge, only one study has been developed (Bolger & Patterson, 2001) in which a confirmatory factor analyses have been performed to assess the associations among different types of maltreatment, using severity within subtype scores for the types of maltreatment proposed by the Maltreatment Classification System (MCS) (Barnett et al., 1993) and by the Modified Maltreatment Classification System (English, Bangdiwala, et al., 2005). This study is very important for their attempt to statistically validate different clusters of multiple maltreatment types using continuous ratings of severity within maltreatment type, but the nature of the collected information remains based on case file reports (Bolger & Patterson, 2001).

Although these studies have made great strides in clarifying associations between various dimensions of maltreatment and differential outcomes, they have not simultaneously examined severity within those types (Pears et al., 2008). Nevertheless, the sequelae of maltreatment are likely to depend not only on the type of maltreatment experienced but also on its severity. Indeed, of the three components of maltreatment often explored in the literature (i.e., frequency, chronicity and severity), severity abuse is the most consensual among researchers. Regardless of the informant, events that are more invasive or that leave lasting disability or injury to children/youth (e.g., acts that result in physical scars or impaired physical functioning), are considered more severe than those whose physical effect is time-limited (e.g., acts that result in minor cuts or bruises) (Jackson et al., 2014). Research using the MMCS (LONGSCAN; English, Bangdiwala, et al., 2005) has revealed that higher total severity of maltreatment is associated to poorer outcomes (e.g., Litrownik et al., 2005). However, considering the severity of each sub-type of maltreatment further increases its power in predicting child outcomes (Manly, 2005). Specifically, type of maltreatment, as indicated by the maximum severity rating of each type, was the most consistent predictor

across outcomes, including behavior problems, socialization, adaptation and trauma symptoms (English, Bangdiwala, et al., 2005).

Research problems and objectives

Professionals working in CPS need to have common and clear criteria to identify cases of maltreatment and to differentiate levels of severity in order to determine when CPS intervention is required, its nature and urgency, and, in most countries, the service that will be in charge of the case (community or specialized CPS). A set of research problems could be identified in the literature, which we aim to address in this manuscript: a) there are no instruments to assess child maltreatment specifically designed for professionals; b) there are no validated tools which enable the multidimensional assessment of maltreatment in research (Hovdestad et al., 2015) that do not rely solely on self-reports and case file reports; c) there is little research using instruments integrating the co-occurrence of various types of maltreatment and a within-subtypes scale of severity.

Thus, based on the studies of Litrownik et al., (2005) and English, Bangdiwala, et al. (2005), which concluded that maximum severity rating of each type of maltreatment was the most consistent predictor across outcomes (behavior problems, socialization, adaptation and trauma symptoms), the main objective of this manuscript is to describe the development of an instrument to assess maltreatment severity, specifically designed to be used by CPS professionals. This tool might help these professionals' decision-making regarding child protection social and legal measures, namely deciding about what kind of family intervention is needed (based on the type of maltreatment and harmful parental practices) or if the out-of-home care services should be used. Specifically, we aim to provide evidence of validity and reliability of a tool that adopts a multidimensional approach of child maltreatment and uses severity within subtype, which might contribute to improve the quality and validity of assessment processes.

Overview

To obtain a valid and reliable instrument a set of procedures was developed through three studies: 1) Study 1- Development of the questionnaire. Based on two previous studies (blind for review, 2016), the questionnaire was developed and the severity level of items within maltreatment subtypes was assigned by community and CPS professionals. Consensus about the severity levels was assessed and will be described in terms of within-item reliability rankings; 2) Study 2 - Items homogeneity. In order to assure that the items within different subtypes of maltreatment were homogenous and had internal consistency, a reliability analysis was performed; Study 3 – Psychometric properties of the MSQ - Different types of validity evidence were obtained. Construct validity was analyzed through exploratory and confirmatory factor analyses, and reliability and, factors sensibility. Additionally, concurrent validity was analyzed by examining the relations between the MSQ factor and different child/adolescent developmental outcomes. Next, we will describe each study in detail.

Study 1 – Development of the Maltreatment Severity Questionnaire (MSQ)

The development of the instrument used in the present research was based on two previous studies (blind for review, 2016) which focused on the cultural and legal definition of maltreatment typologies, based on official reports (surveys and administrative maltreatment data available through a number of sources – child welfare and CPS - to collect annual data cases), legal guidelines, and the conceptions of community and CPS professionals as well as of lay people (i.e., without specialized knowledge in the field), and on the assessment of the level of severity within the different maltreatment practices. In the first study (blind for review, 2016), the Consensual Qualitative Research Method (Hill, Thompson & Williams, 1997) was used to analyze 123 interviews to lay people and nine annual reports of CPS and community social and health services. The analysis of 1235 record units allowed an integrated multi-dimensional definition of child maltreatment, composed of six types and 21

subtypes of maltreatment – physical abuse (two subtypes); psychological abuse (six subtypes); moral-legal/educational abuse (two subtypes); physical neglect – lack of provision (six subtypes); physical neglect – lack of supervision (four subtypes) and sexual abuse (one subtype).

Next, to evaluate the categorization system's reliability through inter-rater agreement, around one-fourth of the record units (randomly chosen) were categorized by four independent judges (psychologist, teacher, physician and social worker) with professional experience in the child protection system, using the parameters established in a dictionary created by the researchers for this purpose as a reference (see blind for review, 2016). The dictionary was based on the contents obtained in the study mentioned above and on Barnett et al. (1993) maltreatment system, through a mixed qualitative methodology, in order to integrate cultural, legal, and theoretical definitions of maltreatment.

After categorizing the record units obtained for each of the 21 items (i.e., subtypes), a scale of severity was created, in which each of the 21 items was composed of four descriptors of specific sub-type maltreatment practices. A sample of 159 trainees in children care services, with and without contact with child maltreatment environments, assigned a severity level (from 1= minimally severe to 4= extremely severe) to each of the four descriptors within the 21 items. The Kendall *W* coefficient (Kendall, 1948) was used to assess the inter-rater agreement regarding the severity order of the four within-type descriptors. Results of this analysis revealed that, for nine sub-types – “age appropriate autonomy”; “surroundings security”; “hygiene”; “feeding”; “developmental needs”; “physical violence methods”; “physical health monitoring”; “aggressive verbal interaction”; and “housing” – the assessment of descriptors' severity was problematic, as a very low consistency was found among participants in accurately rating the severity of maltreatment within those nine items.

The hypothesis of deficiencies at the sub-types descriptors level were proposed to explain these findings. Accordingly, the maltreatment descriptors of the instrument were revised and modified. The present study was thus designed to check whether the modifications introduced in each of the descriptors of these nine items allowed professionals to achieve more accurate results in assessing child maltreatment severity.

Method

Participants. Participants were 93 professionals of health, educational, welfare and CPS services, comprising physicians and nurses (15.1%), psychologists (16.1%), educators, teachers, social educators and social workers (68.8%), mostly women (75.3%), aged between 20 and 50 years old ($M = 25.33$; $DP = 5.57$). Approximately 25% of these had had previous professional contact in CPS services, and 22.6% in educational and welfare services with child maltreatment situations.

Instrument and procedures. In this study, we maintained the syntactic and morphological structure of the 12 out of 21 items (maltreatment sub-types) in which the descriptors' severity levels had been consensually evaluated by participants (blind for review 2016) and changed the syntactic and morphological structure of the descriptors of the nine problematic items, in order to enhance their distinctive severity. The severity scale within each of the 21 items was again composed of the four severity descriptors that resulted from the adaptation of the previous version (i.e., simple sentences describing the characteristics of each severity level). The descriptors of each item were randomly presented to the participants, who were asked to rate them according to their comparative level of severity, using a 4-point scale (1= minimally severe; 2= moderately severe; 3= highly severe; 4= extremely severe). Participants were recruited through convenience sampling from the welfare and CPS systems. Before filling out the questionnaires, it was explained to the participants that the objective of the study was to classify different descriptors of

maltreatment according to their perceived degree of severity. The questionnaires were answered, guaranteeing the confidentiality and anonymity of the data. This study was approved by the University Ethics Commission.

Results

Consensus among the participants in the assessment of within maltreatment sub-type severity levels, as a whole and in pair groups, was analyzed through the Kendall W coefficient. Table 1 presents the 21 items of the scale, the within-item description and ranking of its four descriptors, the general within-item Kendall W concordance coefficient, as well as the statistical significance of difference between descriptors and their ordinal average.

[INSERT TABLE 1]

When analyzing the within-item reliability of the ranking of the four severity descriptors, results showed W values varying between .11 and .90, statistically significant in all the items, thus indicating consistency in the participants' ordering of the severity levels. Although statistically significant, the subtype in which lower agreement coefficient was found was 'age appropriate autonomy' ($W = .11$) in contrast to 'sexual abuse' ($W = .90$).

As for the ordering of the descriptors in pairs of severity levels (i.e., between descriptors 1 and 2; 2 and 3; 3 and 4), results revealed two items, in which the pairs of descriptors were not assessed in a consensual way. The item "age appropriate autonomy" presented agreement problems among the descriptors of the minimum and moderated (1 and 2; $M = 1.99$; $M = 2.33$; $p > .05$), moderated and higher (2 and 3; $M = 2.33$; $M = 2.70$; $p > .05$) and the higher and the most extreme (3 e 4; $M = 2.70$; $M = 2.98$; $p > .05$) severity levels. In the item "physical health monitoring", this pattern was found for the descriptors with the minimum and moderated severity levels ($M = 1.51$; $M = 1.75$; $p > .05$).

Study 2: Item homogeneity of the MSQ

A guiding principle regarding the formulation of research definitions of child maltreatment was the division into homogeneous subtypes. That is, into operational definitions including a set of similar (or internally consistent) maltreating behaviors that reflect a given maltreatment domain. In order to assure this homogeneity, it must be shown that the maltreating behaviors broadly measure the same construct or phenomenon. It is in this notion that estimation of reliability through the internal consistency approach is based.

Although findings of Study 1 revealed an overall high level of inter-rater reliability about the severity order assigned to the behaviors reflecting the several maltreatment items, such agreement does not mean that those behaviors are homogeneous (Herrenkohl, 2005). Indeed, the failure of some studies to find a relationship between a given maltreatment definition and indicators of developmental outcomes might be due to a low internal consistency level of the behaviors included in the operationalization of that maltreatment definition (Nunnally & Bernstein, 1994).

As noted by Herrenkohl (2005), the degree of homogeneity among the behaviors related to each maltreatment dimension can be indexed through calculating the internal consistency reliability of those behaviors. Thus, in order to assure that the four descriptors were representative of its respective maltreatment sub-type, that is, to assure items' homogeneity, Study 2 aimed at evaluating the reliability of each subtype items of the MSQ.

Method

Participants. The MSQ was filled out for 253 children and adolescents (56.5% boys) referred to the Portuguese Children and Youth Protection Committees (CYPC). Children and adolescents' age ranged between 0 and 18 years old ($M = 10.69$; $DP = 4.35$). The MSQ was filled out by the case worker responsible for each child/adolescent file. In 124 of these cases (49.0%) the respective caseworker was a psychologist, in 32 (12.7%) a social educator, in 23

(8.9%) a social worker, in 13 (5.1%) a kindergarten teacher, in 5 (1.6%) an education professional, in 4 (1.6%) a rehabilitation and social integration professional, in 3 (1.2%) a nurse, in another 3 (1.2%) a school teacher, and in 1 (0.4%) a psychomotor therapist. In 45 (17.8%) cases, the case worker did not indicate his/her profession.

Instruments. Children and adolescents' maltreatment (abuse, sexual abuse and neglect experiences) was assessed with the 21 items of the final version of the MSQ (Developed in Study1) by CPS professionals. Each item (sub-type) was composed of four descriptors of increasing severity. Professionals rated each descriptor in a 1-5 frequency scale (1= *unknown/never*, 2= *once/rarely*, 3= *sometimes*, 4= *frequently*, and 5= *often/recurrently/current situation*).

Procedure of data collection. Access and authorization for collecting data were obtained through CPS Units directors, while likewise ensuring the confidentiality and anonymity of the data obtained. Also, confidentiality and anonymity were guaranteed for the data gathered, and informed consent was obtained before participation from professionals and families. This study was approved by the University Ethics Commission. In each CPS Unit, case workers were asked to select the cases they were assisting, followed these criteria: a) current occurrence of at least one of the items related to maltreatment by the family, regardless of other characteristics (e.g., high socioeconomic status) or observed problems (e.g., deviant behavior, etc.); b) children and adolescents with an open file in the child protection system. Case workers filled out the MSQ within the maltreatment investigation process, based on information collected directly through different contacts (e.g., interviews, telephone contacts, home visits) with different sources (e.g., family, health services, educational settings, social services). Caseworkers were trained by the study team to gather comprehensive information to fill out the MSQ adequately.

Procedures of data analysis. Internal reliability of each item was evaluated by calculating the Cronbach's Alpha for each item's descriptors. Values between .60 and .70 indicate acceptable reliability, values between .70 and .90 indicate good reliability, and a value of .90 or higher are considered as indicating an excellent reliability level (Kline, 1995; Nunnally & Bernstein, 1994).

Results

Internal reliability values for maltreatment frequency were: good for the items *Physical Hygiene and wellbeing* ($\alpha = .84$), *Clothing* ($\alpha = .79$), *Developmental needs* ($\alpha = .72$), *School monitoring* ($\alpha = .88$), *Evaluation patterns* ($\alpha = .76$), *Age appropriate autonomy* ($\alpha = .76$), *Coercive/punitive discipline methods* ($\alpha = .71$), *Aggressive verbal interaction* ($\alpha = .86$), *Mental Health monitoring* ($\alpha = .82$), *Feeding* ($\alpha = .84$), *Physical health monitoring* ($\alpha = .82$), *Relationship with attachment figures* ($\alpha = .72$), *Family environment* ($\alpha = .85$), *Physical violence methods* ($\alpha = .72$), *Supervision* ($\alpha = .89$), *Housing and hygiene conditions* ($\alpha = .75$), *Surroundings security* ($\alpha = .88$), *Alternative/supplementary monitoring* ($\alpha = .75$), and *Sexual Abuse* ($\alpha = .75$); and acceptable for *Aggressive physical interaction* ($\alpha = .67$) and *Context of Socio-moral development* ($\alpha = .63$).

Study 3 - Psychometric properties of the MSQ: construct validity, reliability, factors sensibility, and concurrent validity

In Study 3 the construct validity of the MSQ was assessed with a holdout method, performing an Exploratory Factor Analysis (EFA) followed by a Confirmatory Factor Analysis (CFA). Moreover, sensibility will be tested by associating MSQ factors with age and sex. Emerging evidence suggests that it is also important to consider child/adolescent features, such as age and gender, in operationalizing maltreatment (Gabielli & Jackson, 2019; Rivera et al., 2018). Regarding age differences, previous research has found somewhat similar patterns of co-occurring emotional abuse, physical neglect, and supervisory neglect

during early and late childhood (Villodas et al., 2012). However, epidemiological research on the prevalence of maltreatment has indicated that particular types are more prevalent across childhood (e.g., neglect) and others across late childhood or adolescence (e.g., sexual abuse; U.S. Department of Health and Human Services, 2013). The findings from Jackson, Gabrielli, Fleming, and Tunno (2019) also indicated that as child/adolescent age increased both severity and frequency of maltreatment also increased. Significant gender differences in prevalence studies (Tran et al., 2017) and in latent class membership probabilities have been found among children and youth (Kang, Bae, & Fuller, 2015), whereas some studies failed to identify any gender differences across classes of maltreated adolescents (Rivera et al., 2018). Regarding the subtypes of maltreatment, males are more likely to experience physical abuse than females (Thompson, Kingree, & Desai, 2004).

Finally, concurrent validity will be tested by correlating MSQ factors with psychopathology and self-representations scales. Since severity of maltreatment is also defined by its sequelae in children and adolescents, it is also important to analyze the relations between maltreatment and child/adolescent outcomes. Regarding mental health outcomes, diverse short- and long-term externalizing and internalizing behaviors potentially related to maltreatment have been tested. Specifically, different kinds of analysis (e.g., covariance, multiple regressions) have shown that scores on the internalization and externalization behaviors are significant related to different types of maltreatment (English, Upadhyaya, et al., 2005; Éthier, Lemelin, & Lacharité, 2004; Jackson et al., 2019; Litrownik et al., 2005). However, not all children and adolescents exposed to maltreatment demonstrate the same outcome and it is possible that given the range of severity and frequency of their experiences, not all youth were necessarily likely to demonstrate significant maladjustment (Bonanno, 2004). In addition, a considerable body of research has demonstrated that maltreatment experiences are also particularly detrimental to children's and adolescents' self-

system (Berzenski, Madden, & Yates, 2019; Cicchetti, 2015; Harter, 1998, 2015; Kim & Cicchetti, 2006). Indeed, several studies have documented that children and adolescents with maltreatment experiences present more negative self-representations and other self-system outcomes than non-maltreated children and adolescents (Arslan, 2016; Cicchetti, 2015; Oshri, Carlson, Kwon, Zeichner, & Wickrama, 2017; Toth et al. 2013; Turner, Shattuck, Finkelhor, & Hamby, 2017).

Method

Participants. A total of 1000 MSQ were filled out regarding children and adolescents (51.1% boys), most of which ($n = 853$; 85.3%) were referred to the Portuguese CPS, while 93 (9.3%) were attended by child welfare community institutions for at-risk children and youth. As for the remaining 54 (5.4%), their situation regarding the protection system was unknown. Children and adolescents' age ranged between 0 and 18 years old ($M = 9.47$; $DP = 4.51$). The MSQ was filled out by the case worker responsible for each child/adolescent file. In 371 of these cases (37.1%) the respective caseworker was a psychologist, in 165 (16.2%) a social worker, in 100 (10%) a social educator, in 36 (3.6%) a kindergarten teacher, in 24 (2.4%) a school teacher, in 16 (1.6%) an education professional, in 7 (0.7%) a sociologist, in 6 (0.6%) a nurse, in another 6 (0.4%) a psychomotor therapist, and in 5 (0.5%) a rehabilitation and social integration professional. In 264 (26.4%) cases, the caseworker did not indicate his/her profession. Chronicity of maltreatment was rated by the amount of time children and adolescents had an open file in the CPS (e.g., Jackson et al., 2014), in a five-point scale, where 1 = less than one year, 2 = between one and two years, 3 = between two and three years, 4 = between three and four years, and 5 = more than four years ($M = 2.03$; $SD = 1.17$).

In order to test the concurrent validity of the MSQ, two additional instruments were administered to a subsample of 203 children and adolescents (52.7% boys), 8 to 16 years old ($M = 12.64$; $SD = 2.47$) and their parents/caregivers (mostly mothers/substitute maternal

caregivers). Most ($n = 112$; 54.9%) lived with both parents, 83 (34.8%) lived with only the mother (of these, 15 had frequent contact with the father), and 9 (4.4%) lived with only the father (of these, 8 had frequent contact with the mother). Regarding participating parents, 188 mothers and 67 fathers participated in the study. In 52 cases (24.5%) both parents participated, in 136 cases (67.7%) only the mother participated, and in 15 cases (7.4%) only the father participated. Mothers' age ranged between 25 and 63 ($M_{\text{age}} = 40.69$ years, $SD = 7.44$). Fathers' were aged between 21 and 74 ($M_{\text{age}} = 42.42$ years, $SD = 8.06$).

Instruments.

Maltreatment Severity Questionnaire (MSQ). To evaluate children and adolescents' abuse and neglect experiences, the final version of the MSQ previously described in study 1 was used. The level of severity of each item was rated using a 5-point scale (1 = "unknown/never occurred"; 2 = a little severe; 3 = moderately severe; 4 = highly severe; 5 = extremely severe). The reliability of the MSQ was verified. The first 67 selected cases the questionnaires were filled out by three different professionals resulting in the determination of a concordance index of 89% and Cohen's Kappa of .73 ($p < .001$).

Child Behavior Checklist (CBCL), Achenbach & Rescorla, 2001; Achenbach et al., 2014). The CBCL assesses children's and adolescents' psychopathology symptoms as perceived by parents/caregivers. Parents completed the internalization and externalization scales of the CBCL. The internalizing factor includes the depression, anxiety, withdrawal, and somatic complaints subscales. The externalizing factor includes the opposition and aggressive behavior subscales. The items are scored by the parents on a scale of 0 (not true for child) to 2 (very often true for the child). In this study, internal reliability was excellent for the externalizing scale ($\alpha = .95$) and good for the internalizing scale ($\alpha = .82$) (Kline, 2000). Evidence for the validity of the CBCL has been provided by a large amount of studies developed in several countries (Achenbach et al. 2008).

Self-representation Questionnaire (Blind for review, 2016). This questionnaire measures children's and adolescents' domain specific self-representations. It consists of 18 attributes (10 positive - e.g., happy, intelligent; and 8 negative - e.g., sad, lazy), in which children and adolescents rate themselves on a 5-point scale, from 1 (I am not at all like this) to 5 (I am exactly like this). This instrument is composed by six factors: instrumental (five items; e.g., responsible); social (four items; e.g., nice); emotional (three items; e.g., angry); physical appearance (two items; e.g., pretty); intelligence (two items; e.g., intelligent); and opposition (two items; e.g., stubborn). The negative attributes are reverse-scored. Higher values in each dimension represent more favorable SR. In the present sample, the attribute 'friendly' was excluded from subsequent analyses due to a highly skewed distribution (i.e., $sk = -3.75$; $sk/SE = 21.49$). Internal consistency of the dimensions was acceptable to good: instrumental ($\alpha = .73$), social ($\alpha = .68$; mean inter-item correlation = .41), emotional ($\alpha = .63$; mean inter-item correlation = .36), physical appearance ($\alpha = .84$; mean inter-item correlation = .73); intelligence ($\alpha = .84$; mean inter-item correlation = .72); and opposition ($\alpha = .70$; mean inter-item correlation = .54). A confirmatory factor analysis of this measure with this subsample with the remaining 17 attributes revealed a good model fit: $\chi^2 (116) = 209.45$, $p < .001$; $\chi^2/df = 1.81$; CFI = .92; RMSEA = .08, 90% CI [.05, .07]; SRMR = .06.

Procedure of data collection. This study was also approved by the University Ethics Commission. Access and authorization for collecting data were obtained through CPS Units directors, while likewise ensuring the confidentiality and anonymity of the data obtained. Also, confidentiality and anonymity were guaranteed for the data gathered, and informed consent was obtained before participation from professionals and families. In each CPS Unit, caseworkers were asked to select, among the cases they were assisting, those regarding children/adolescents, in which the evaluation carried out allowed the identification of at least one maltreatment action or omission listed in the MSQ. Then, at the end of the next a

casework meeting, the caseworkers informed the families that their service was collaborating in a research study and asked the families if they would accept to be provided with more detailed information by the researcher regarding the aims and procedure of the study. Those who accepted were provided with detailed information regarding the goals, procedure, and ethical considerations of the study, followed by an invitation to participate in the study. After declaring to accept, parents signed the information and consent form, declaring to agree to participate and providing permission for their child's participation. Then, adolescents aged more than 12 years old also signed an information and consent form, and children under 12 years old provided informed assent to participate in the study. All participants were told that their participation was voluntary and that they could choose not to participate or to quit participating at any time, if they desired. Participant anonymity was guaranteed, and they were assured that information would be used only for research purposes. The questionnaires were individually administered to each participant (parents and children and adolescents). Caseworkers filled out the MSQ for each child/adolescent whose participation was authorized by the parent(s)/parenting figure(s), following the same procedure described in study 2.

Procedure of data analysis. Data analysis was conducted with IBM-SPSS Statistics 20.0 and AMOS 20.0 (Arbuckle, 2011). Following a descriptive analysis of the 21 items of the MSQ, the construct validity was tested with a holdout method. The full sample was randomized into two sub-samples, selecting approximately 50% of the cases: Sample A – 502 participants; Sample B – 498 participants. First, an Exploratory Factor Analysis (EFA) was conducted in Sample A, using principal axis factoring. Then a Confirmatory Factor Analysis (CFA) was performed in Sample B, using Maximum Likelihood Estimation. Reliability was analyzed through Cronbach's Alpha. Sensibility of the MSQ factors was analyzed through an independent samples t-test for sex differences, and through correlation analysis for age

differences. Concurrent validity was tested by correlating the MSQ factors with the internalization and externalization scales of the CBCL and with the SRQ dimensions.

Results

Descriptive analysis. Preceding the analysis of the construct validity, a descriptive analysis of the questionnaire's 21 items was performed in order to obtain information about the internal symmetry of the items' distribution. This analysis allowed the identification of one item (i.e., Sexual Abuse) that had a highly skewed distribution, given that the majority of participants scored "1= *unknown/never*". Therefore, this item was not included in the subsequent analyses. The absolute values of skewness for all the remaining 20 items were lower than 3, which can be considered as non-problematic in terms of distribution (Kline, 2005). Therefore, all 20 items were included in the subsequent EFA.

Exploratory factor analysis (EFA). In order to identify the factor structure of the 20 items, an exploratory factor analysis, using the principal axis factoring extraction method, was conducted with Sample A. The factor model adequacy was checked by the significant value of the Bartlett's Test of Sphericity [$\chi^2(153) = 3727.27, p < .001$] and the medium Kaiser-Meyer-Olkin (KMO=.89). An oblique rotation was applied to the solution in light of the theory-driven expectation that the factors would be interrelated (Herrenkohl & Herrenkohl, 2009). The decision regarding the number of factors to retain was based on parallel analysis with a 95% confidence interval (Horn, 1965; O'Connor, 2000), which compares the progressive eigenvalues of the data to the eigenvalues of randomly generated data of the same dimensions. Parallel analysis suggested the extraction of three factors with eigenvalues greater than chance to account for a sufficient amount of covariance. Following recommendations from Tabachnick and Fidell (2013), the item 13 (i.e., family environment) was removed from subsequent analyses due to a very low communality (i.e., $< .30$), that is, very low proportion of variance explained by the factor structure. The item 5 (i.e., evaluation

patterns) was also dropped from the analysis due to high cross-loadings (i.e., loadings $>.30$ in several factors) and poor theoretical interpretability within the factor. The item 11 (i.e., physical health monitoring) also presented a cross-loading but was retained due to its good theoretical fit within the factor in which it loaded the highest.

The EFA on the remaining 18 items had significant factor loadings $>.32$ that were organized in specific meaningful factors. The final solution thus comprised three factors, with 47.3% of variance explained. Table 2 reports the factor loadings from the EFA, as well the variance explained by each factor. The first factor (eight items selected), which was named “Physical Neglect”, explained 32.8% of the variance, and was defined by parental omissions concerning the insurance and monitoring of the child’s physical well-being and health, namely in terms of clothing, hygiene, housing conditions and environmental safety. The second factor (four items selected), was named “Physical and Psychological Abuse”, explained 9.7% of the variance and the included items described parental abusive physical and psychological actions, namely, coercive/punitive disciplinary methods, physically violent methods or verbal interactions that offend and denigrate the child, with the potential to disrupt psychological attributes (e.g., self-esteem). The third factor (six items selected), was named “Psychological Neglect”, explained 4.8% of the variance, and involved parental omissions related to children emotional development, mental health monitoring, school attendance, development needs, as well as inappropriate relationship patterns with attachment figures. Reliability of the three factors has been checked with the Cronbach’s Alpha. As shown in table 2, results indicated a good reliability of the three factors (Kline, 2000).

[INSERT TABLE 2]

Confirmatory factor analysis (CFA). In order to test the appropriateness of the three-factor structure obtained in the previous EFA, a CFA was conducted on subsample B with AMOS 20 software (Arbuckle, 2011), using the maximum likelihood estimation. The

goodness of fit was assessed with the following criteria: the ratio of the chi-square statistic to the degrees of freedom (χ^2/df) below 4 (Arbuckle, 2011), the comparative fit index (CFI) of .90 or higher, the root mean square error of approximation (RMSEA) and the standardized root mean square residual below .08, as indicative of acceptable fit (Hu & Bentler, 1999; Kline, 2005). Next, the reliability of each factor was assessed. In subsample B, a descriptive analysis of the frequency distribution of all items was conducted in order to identify the missing cases¹. This analysis allowed the identification of five participants with less than 70% of the items filled out, which were thus removed from subsequent analyses. Another eight participants had missing values in less than 30% of the items and were thus retained in the subsample. Furthermore, given that no items had more than 5% of missing values, these were imputed using the series mean method.

[INSERT TABLE 3]

A three-factor model was tested. However, as shown in Table 3, CFA results indicated that this model did not meet the proposed criteria for a good model fit (i.e., $\chi^2/df > 4$; CFI < .90; RMSEA and SRMR > .8). As such, a second three-factor model was tested, allowing for correlations between error terms of five pairs of items, based on the inspection of modification indices which suggested that adding these correlations could improve the model fit, coupled with theoretical interpretability: 1 (physical hygiene and wellbeing) and 2 (clothing); 11 (physical health monitoring) and 18 (surroundings security); 19 (alternative monitoring) and 20 (socio-moral development); 7 (coercive discipline methods) and 8 (aggressive verbal interaction); and 3 (developmental needs) and 9 (mental health monitoring). This model showed a better fit to the data (Table 3) and was within the range of an acceptable model fit: $\chi^2 (127) = 477.949, p < .001$; $\chi^2/df = 3.763$; CFI = .90; RMSEA = .08; SRMR = .07.

¹ CFA performed with AMOS requires the absence of missing values.

[INSERT FIGURE 1]

Figure 1 displays the three-factor standardized solution for the QCM, the factor loadings of the items on each factor, the correlations between factors, obtained in the second model. All factor loadings were higher than .50, and most are considered strong (i.e., > .60), which suggests good convergent validity (Brown, 2006). In addition, all correlations between factors were significant. The two neglect factors were highly correlated, but correlations between the abuse factor and both neglect factors were low to moderate, suggesting acceptable discriminant validity between the factors (Brown, 2006). Composite reliability was good for the three factors: .85 (Physical neglect), .84 (Physical and Psychological abuse), and .76 (Psychological neglect). A descriptive analysis of the three factors revealed the following composite mean values: Physical Neglect $M = 2.20$, $SD = 1.01$; Physical and Psychological Abuse $M = 1.81$, $SD = .98$; and Psychological Neglect $M = 2.73$, $SD = 1.01$.

Sensibility of the MSQ factors. To analyze the sensibility of the MSQ, sex and age differences in the MSQ factors were analyzed. Regarding sex differences, an independent samples t-test with the whole sample revealed significant sex differences in the Physical and Psychological Abuse ($t(982) = 2.21$, $p < .05$) and Psychological Neglect ($t(968) = 1.92$, $p < .10$) factors. Specifically, results showed that boys were rated on the MSQ as having been subject to higher levels of these parenting practices (respectively: $M = 1.91$, $SD = 1.01$; $M = 2.74$, $SD = 1.01$) than girls (respectively: $M = 1.77$, $SD = .96$; $M = 2.61$, $SD = 1.05$). As for age, a significant correlation was found between psychological neglect and child/adolescent age ($r = .33$, $p < .001$), showing that, as age increased, psychological neglect towards children and adolescents also increase.

Concurrent validity. To analyze the concurrent validity of the MSQ, the correlations of the MSQ factors with internalizing and externalizing factors of the CBCL and the children's and adolescents' domain-specific self-representations (SR) were analyzed.

Regarding the correlations with internalizing and externalizing symptoms, this analysis showed that physical and psychological abuse and psychological neglect were positively correlated with children's and adolescents' externalizing problems (respectively: $r = .37, p < .001$; $r = .18, p = .020$). As for correlations with SR dimensions, results of this analysis revealed that: 1) physical neglect negatively correlated with intelligence SR ($r = -.17, p = .026$); 2) Physical and psychological abuse was negatively correlated with social SR ($r = -.22, p = .003$); and 3) Psychological neglect was negatively correlated with social ($r = -.18, p = .013$), physical appearance ($r = -.20, p = .022$), and intelligence SR ($r = -.19, p = .007$).

Discussion

Given the scarcity of research and measures on maltreatment, the studies presented in this paper aimed at developing and validating an instrument to assess maltreatment, specifically designed to be used by professionals in CPS services, which adopts a multidimensional approach and uses severity within subtypes. Specifically, we aimed to provide evidence of validity and reliability of this tool, in order to improve the quality and validity of professional assessment and, consequently, to improve decision-making processes regarding the CPS referred cases to different responses in both the community (e.g., preventive or early intervention programs) and the CPS services (e.g., maltreatment reduction interventions; child removal). To obtain a valid and reliable instrument a set of procedures was developed through three studies.

Based on two previous studies (blind for review, 2016), in Study 1 the questionnaire was developed and the severity level of items within maltreatment subtypes was assigned by community and CPS professionals. Consensus about the severity levels was assessed and within-item reliability rankings were obtained. Results showed a high agreement level regarding the severity order of those maltreatment practices descriptors when they were evaluated conjointly. This finding suggests that the content of the descriptors of each item are

adequate and descriptive of the socio-legal context of child maltreatment. Thus, the consensus in the items' evaluation points to a good suitability of the scale to measure the severity of different maltreatment subtypes. As for the ordering of the descriptors in pairs of severity levels, only one item, "age appropriate autonomy" (psychological abuse), revealed that all the pairs of descriptors were not assessed in a consensual way. In the item "physical health monitoring", this pattern was found only for the descriptors with the minimum and moderate severity levels. Similar to other authors (e.g., Dubowitz et al, 2005; Gabrielli et al., 2017; Jackson et al., 2019; Korbin, et al., 2000), this result showed that, in the community and CPS professionals' opinion, a consensual evaluation of severity in situations without signs of immediate, clear and observable damages to the child - as is the case with the descriptors of "age inappropriate autonomy" - is more difficult. Furthermore, psychological abuse and neglect are less consensual areas, suggesting that they may be subject to less professionals' awareness (e.g., Korbin, et al., 2000). Indeed, bearing in mind the results of previous studies (e.g., blind for review, 2016; Portwood 1998), perceptions of the severity of neglectful practices, for example, in supervising children, gather less consensus among professionals. For sure, identifying inadequate supervision is complex, given the difficulty of assessing parent omissions and the lack of clear standards for leaving children unsupervised (Stowman & Donohue, 2005). In general, there are no clear, agreed upon standards to differentiate between acceptable parental practices and those that cross the line into child maltreatment (Cicchetti & Manly, 2001). This differentiation is even more difficult when it comes to cases of psychological abuse and neglect.

In order to analyze items' homogeneity and internal consistency, a reliability analysis was performed in Study 2. The findings revealed that internal reliability was good for most items and acceptable for two of the items evaluated, indicating that in general the four descriptors of each item were representative of its respective maltreatment sub-type. Thus,

the internal consistency level of the practices/behaviors included in the described operationalization of MSQ could further contribute to improve research on relations between a given maltreatment sub-type and indicators of children's or adolescents' developmental outcomes (Herrenkohl, 2005; Rivera et al., 2018).

To address the need for psychometrically sound instruments to assess maltreatment by CPS professionals, in study 3, the organizational structure of 20 items was analyzed in two steps, through an exploratory factorial analysis (EFA) and a confirmatory factorial analysis (CFA), respectively. The CFA supported the three-factor structure found in the EFA as the most parsimonious model, with an acceptable global model fit and good composite reliability for all three factors. These results thus suggest that the MSQ can be a useful tool for professionals to assess maltreatment.

The three-factor structure of the MSQ that resulted from this study showed that the indicators did not represent a single latent construct of maltreatment. Moreover, this structure includes some dimensions that have been previously identified as relevant using continuous ratings of severity within maltreatment subtype, based on case file reports (Bolger & Patterson, 2001). However, this structure is quite different from the eight maltreatment types that were proposed in the MMCS (English, Bangdiwala, et al., 2005) and the three-factor structure (*Neglect, Harsh Parenting, and Sexual Abuse*) of the study developed by Bolger & Patterson, (2001). Specifically, the *Physical Neglect* and the *Psychological Neglect* dimensions mirror the two English, Bangdiwala, et al.'s (2005) MMCS's description of negligence: *Failure to Provide* and *Lack of Supervision*. Both proposals include neglect subtypes regarding *Physical Neglect/ Failure to Provide*. However, the *Physical Neglect* factor obtained in our study also includes the item *Moral, Legal Maltreatment*, and two items - *Lack of Surroundings Security* and *Lack of Alternative Monitoring* - that are included in the *Lack of Supervision* dimension in MMCS. The second neglect factor, *Psychological Neglect*,

includes MMCS subtypes such as *Lack of Supervision*, *Emotional Maltreatment* and *Educational Maltreatment* through MSQ items such as *Supervision*, *Relationship with Attachment Figures* and *School Monitoring*, respectively. Contrary to the MMCS proposal and the model obtained in our study, in Bolger and Patterson's (2001) model obtained through confirmatory factor analyses, Neglect incorporated *Failure to Provide (Physical neglect)* and *Lack of Supervision (Supervisory neglect)*.

On the other hand, the *Physical and Psychological Abuse* dimension is comparable to other studies using confirmatory factor analyses of data collected in case reports (Bolger & Patterson, 2001), and both foster care youth (Gabrielli et al., 2017) and U.S adolescents and early adults' self-reports (Brumley et al., 2019). In all these studies, both physical and emotional/psychological abuse are included in the same dimension, unlike the MMCS where three separate dimensions were proposed to evaluate abuse (i.e., physical abuse, emotional and educational maltreatment). This result was not surprising given many prior findings also described that physical and emotional abuse is highly correlated (Dong et al., 2004; Gabrielli et al., 2017).

In line with previous research indicating that different types of maltreatment are often significantly correlated (Brumley et al., 2019; Jackson et al., 2014), the two neglect factors obtained in this study were highly correlated. However, correlations between the abuse factor and both neglect factors were fairly low, which supports the discriminant validity between the factors (Brown, 2006).

Given that the subtype *Sexual Abuse* had a highly skewed distribution, this item was not included in the factor structure. However, findings from study 2 indicated that the four descriptors were representative of this sub-type, thus ensuring their homogeneity. Therefore, this item can be used to assess the occurrence and severity of child/adolescent sexual abuse and used as a predictor in models examining different types of maltreatment as predictors of

child/adolescent outcomes. Moreover, future research should include additional efforts to address the psychometric properties of sexual abuse dimension (e.g., correlating this dimension with other scales assessing child sexual abuse, and also developing studies focused on criterion validity using, for instance, post-traumatic stress measures).

Taken together, and although this research area seems more fertile for innovative statistical approaches to assist in the development of models for addressing this construct in a broader and more comprehensive way (e.g., Gabrielli & Jackson, 2019; Brumley et al., 2019), this diversity of results in the literature points to differences according to the source and type of data collection, and cultural specificities. Actually, all the commonalities and differences among the findings obtained in these studies could be explained by differences in the nature of data collection source, the current status of maltreatment (reported, under investigation or substantiated; Fallon et al., 2010; USDHS, 2008), and the possibility that the questionnaire itself may have served as an accurate guide for maltreatment assessment by professionals. Developed with the use of advanced statistical methods, this body of research has the potential to address several of the limitations identified in the literature and advance scientific understanding of maltreatment.

Moreover, as emerging evidence suggests that it is also important to consider child/adolescent features, such as gender and age, in operationalizing maltreatment (Gabrielli & Jackson, 2019; Gabrielli et al., 2017; Rivera et al., 2018) we also analyzed the relations between the different types of maltreatment and these variables. Results showed that boys were rated as having higher levels of *Physical and Psychological Abuse* than girls. This is in line with findings from previous research indicating that boys are more likely to experience physical abuse than females (Thompson et al., 2004). Regarding age differences, results of this study showed that levels of *Psychological Neglect* towards children and adolescents also

increased with age, also in line with previous research showing that severity of maltreatment increased with age (e.g., Jackson et al., 2019).

Finally, to test the concurrent validity of the MSQ, correlations of the MSQ factors with internalizing and externalizing problems, and domain-specific self-representations (SR) were analyzed. Regarding associations with psychopathology symptoms, results showed that Physical and Psychological Abuse and Psychological Neglect were positively correlated with children's and adolescents' externalizing problems. These findings are consistent with previous studies showing that severity of abuse was predictive of adolescents' externalizing problems (Jackson et al., 2014; Litrownik et al., 2005). As for the lack of associations with internalizing problems, it is possible that because child/adolescent psychopathology symptoms were measured via caregiver-report, the experiences of internalizing behavior were less likely to be identified as other research suggests youth self-report to be the best method for assessing internalizing symptoms (Van de Looij-Jansen, Jansen, de Wilde, Donker, & Verhulst, 2011). Indeed, prior research comparing the reports of youth and adults (e.g., parents, teachers) on child/adolescent psychopathology has shown a higher agreement for externalizing problems, and a lower agreement for internalizing problems (Rescorla et al., 2013). Given that externalizing problems are quite visible, parents' and youth's reports of those problems may be more similar. Internalizing problems, on the other hand, are less observable, and parents may not know that their children are feeling depressed or anxious, unless their children reveal these feelings (Rescorla et al., 2013). In the context of child/adolescent maltreatment, this discrepancy may be amplified, since, as shown in previous research, maltreating parents/caregivers are typically less accurate in recognizing their children's emotions (Wagner et al., 2015).

Concerning associations with domain-specific self-representations, results showed that all three factors were associated with more negative self-representations in different

domains, which is consistent with several studies that have documented children and adolescents with maltreatment experiences present more negative self-representations and other self-system outcomes than non-maltreated children and adolescents (Arslan, 2016; Cicchetti, 2015; Oshri, Carlson, Kwon, Zeichner, & Wickrama, 2017; Toth et al. 2013; Turner, Shattuck, Finkelhor & Hamby, 2017).

Overall, the findings obtained in the three studies provided preliminary evidence that the SMQ is a reliable, valid and informative instrument for assessing exposure to maltreatment among children/youth. Evidence documented in this manuscript is well-matched with the proposal, advocated by several authors, for further advancing measurement of child maltreatment (e.g., Dubowitz et al., 2005; Fallon et. al., 2010; Manly, 2005; Rivera, et al., 2018). Manly (2005), for example, had already noted that “because of the high frequency of multiple subtype co-occurrence, research on maltreatment requires a well-conceptualized and empirically sound rationale for handling comorbidity to prevent it from obfuscating distinctions among subtypes and the relative contributions of each” (p. 432). The assessment of multiple types of maltreatment is important for understanding which types co-occur and how this co-occurrence constitutes a risk factor for children’s health and psychosocial outcomes (Finkelhor, Ormrod, & Turner, 2007; Pears et al., 2008).

The direct filling of the instrument by professionals could increase data reliability, given that they have the possibility to collect information from both family members and community professionals, and have specialized training to analyze that information. In addition, the use of this instrument can serve as a guideline for indicators of maltreatment to be observed/evaluated. It may support: access to, and consultation of, several information sources, including interviews with children, educators and other professionals, among others; direct observation of behaviors and interactions between caregivers and children/youth; and/or the analysis of case file documents (e.g., narratives of parents, children/youth,

referring sources). This would allow all relevant information for decision-making, regarding CPS evaluation and intervention, to be collected in a single registration instrument.

Specifically, structured or standardized tools aimed to help professionals' evaluations could contribute to effective decisions. Professionals need to use structured systems of evaluation, including direct collection of information to prevent many of the current evaluation problems that persist both in practice and research in this area. The absence of validated structured measures that allow the severity assessment of multiple types of child maltreatment (Hovdestad et al., 2015) was also one of the main concerns of this work. Indeed, a common critique of past research on maltreatment is that focusing on single types of maltreatment in isolation fails to deal with the problem of co-occurring maltreatment types, thereby confounding the interpretation of results (Rivera et al., 2018; Van Scoyoc, Wilen, Daderko, & Miyamoto, 2015). This, in turn, may limit efforts to test etiological models, or to examine differential outcomes as a function of maltreatment type (Hovdestad et al., 2015; Jackson et al., 2014; Rivera et al., 2018). In sum, this a structured checklist for CPS professionals gathering information on various types of child maltreatment, including a set of discreet subcategories of maltreatment (i.e., each item includes four descriptors that could be recorded also in terms of frequency). However, it is important to state that merely based on this study we are not able to specify thumb rules about low, moderate or high risk that determine the type of intervention or the duration that a file is left open. Further studies are needed to provide additional evidence about cut-off points that could be considered in the decision-making processes.

Some limitations can be identified in these studies. First, on study 1 we used a convenience sample under-represented by mental health professionals and over-represented by "education" professionals and only about 50% of all professionals had experience in the area of maltreatment. However, the validity of the severity levels was also established

through the empirical relationship between the results of MSQ and child development and well-being. Still, further research should include a more balanced sample regarding professions and work setting. Second, the questioning of the subjects on the ranking of severity was done in relation to the indicators of each subtype, and not in relation to the different subtypes of abuse and neglect, and it did not include measurement of either frequency or chronicity of maltreatment. However, previous research has suggested that both type and severity of maltreatment play a more important role as predictors of problematic mental health and adaptive functioning than frequency and chronicity of maltreatment (e.g., English, Upadhyaya et al., 2005; Gabriel et al., 2019; Jackson et al., 2014). Nevertheless, understanding the multiple components of maltreatment (i.e., frequency, severity, and chronicity) is an important area for growth in this field's literature. Thus, future studies should focus not only on severity of maltreatment but also on simultaneously considering frequency and accomplished vs. immediately impending harm. This may allow an improved data collection by CPS investigators, and inform the decision of whether, and which, intervention is needed. Such a disaggregated conceptualization of these three dimensions is relevant as it would allow CPS professionals to take into consideration different levels of maltreatment measurement and conceptualization - e.g., acute vs. cumulative harm, accomplished vs. immediately impending (e.g., living with an alcoholic parent and/or with a history of violence, being seriously threatened). Third, child/adolescent age as an indicator of their development, and sex, were only included when analyzing the sensibility of the MSQ factors. Therefore, as a proposal for future work, it is essential to pursue research incorporating considerations on the children's age in the allocation of severity, so as to evaluate maltreatment and further developing the instrument, taking developmental stages of children into account. Specifically, future studies should test measurement invariance of this factor structure across different age and sex groups. Fourth, concurrent validity was merely

explored as inferential (i.e., it is based on the association of the severity ratings with negative child outcomes), and future research may involve the comparison of MSQ ratings with other severity information (e.g., removal of children from the home and/or ratings on other scales). Finally, by relying only on parents as informants of child/adolescent psychopathology, valuable information may have been lost, especially regarding internalizing symptoms, which may be less apparent to parents (Rescorla et al., 2013). Thus, future analyses of associations between MSQ dimensions and child/adolescent psychopathology should also include children's and adolescents' reports of their symptomatic behavior.

The MSQ psychometric properties will make this instrument useful in conducting further epidemiological research studies and evaluating children's exposure to interventions aimed at reducing child maltreatment. Accurate assessment of the prevalence of child victimization and its determinants is critical to inform policies and programs aimed at effective prevention and intervention. A fundamental first step to achieving this goal is the development of a theoretically based, valid, and reliable measure. Although more evaluative work would be welcome, we believe that the MSQ is promising and we envision it being incorporated into child and youth protection system studies. This type of analyses would not only provide us with more accurate evaluations of child maltreatment but would also contribute substantively to our understanding of the causes, correlates, and consequences of maltreatment.

Conclusion

In a nutshell, we have presented preliminary evidence of the good psychometric qualities of the MSQ and of its potential as an adequate measurement instrument to analyze the co-occurrence of multiple forms of maltreatment and their severity. Thus, the implications of the MSQ for research and practice are numerous. To begin with, this instrument allows research to take one step further by measuring in a systematic and

quantitative way the severity of child and youth maltreatment by CPS professionals. This enables a reliable procedure used by CPS professionals to evaluate maltreatment to the various stages along the child protection system continuum (e.g., referral, substantiation, intervention decision making, etc.; Fluke, Yuan, Hedderson, & Curtis, 2003), and to use this evaluation knowledge to train other specialized personnel working in this area. Additionally, the scores from the MSQ might help the comparison process of different groups of victims of maltreatment, supporting more accurate research and specific and successful interventions with this population.

Note

Access to the final version of the MSQ can be obtained through an e-mail to maria.calheiros@psicologia.uliboa.pt.

Methodological Disclosure

We report how we determined our sample size and all measures in the study.

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(Four entries have been deleted for the purposes of masked review)

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Table 1

Description and ordering of the severity descriptors, *W* values and averages (*N* = 93)

Descriptors	<i>W</i>	Sig.	<i>M</i>
<i>Aggressive physical interaction</i>	.84***		
They hit the child without reaching the neck or head and leaving no marks or leaving only small marks (e.g., small bruises on the arm or tail).		***	1.12
They inflict various marks or a well-visible mark on the child's body, not reaching the neck or head (e.g., jabbing, pinching, punching, kicking).		***	2.14
They inflict small burns (e.g., cigarette burns) minor abrasions or lacerations on the body, or cause marks on the child's head, face, or neck (e.g., black eye, slap marks).		***	2.81
They inflict injuries requiring hospital treatment or hospitalization (e.g., severe lacerations, second degree burns, fractures, internal injuries without skin-visible marks).			3.94
<i>Physical violence methods</i>	.87***		
They violently pull or shake the child (e.g., pull the hair, pull the ears).		***	1.17
They hit the child hard, with the hand or with an object (e.g., scabbard, soft belt, ruler, shovel) in the body, not reaching the neck or the head.		***	1.98
They kick or punch the child with closed hand or hit the child, without reaching the neck or head, with a blunt object (e.g., belt buckle, electric wire) or burn her with a cigarette.		***	2.87
They brutally manipulate the child; they try to choke her; they reach her with an object (e.g., telephone); they throw her against the wall or down the stairs; they put her on fire, or in boiling water or burn her with an electric apparatus.			3.98
<i>Family environment</i>	.76***		
They underestimate the child's relationship with other significant family members (e.g., make negative comments about the other parent – mother or father; they do not allow any contact with grandparents).		**	1.39
They expose the child to physically non-violent marital conflicts (e.g., screams, crying or insults between the couple).		***	1.68
They expose the child to physically violent marital or family conflicts (e.g., episodes of physical aggression).		*	3.39
They expose the child to adults' violent outbursts and extremely inappropriate and unpredictable behaviors (e.g., alcoholic status) or to extreme marital/ family violence where adults are injured.			3.55
<i>Relationship with attachment persons</i>	.59***		
They are not very attentive or are unable to respond to the child's affective needs (e.g., they do not establish positive and affective interactions with the child, their affective acts are unpredictable, they are passive or they do not perceive the child's affection needs, they do not provide stimulating activities with toys or dialogue; the child spends too much time on the computer, TV).		**	1.54
They ignore the child's requests for attention (e.g., they do not give the necessary attention, they do not respond to a baby's cry or to an older child's call to initiate an interaction).		***	1.94
They leave the child for periods of time longer than 24 hours without providing her any indication, or one parent abandons the child (e.g., one parent does not contact the child).		***	2.73
Parents abandon the child (e.g., both the father and the mother have no contact with the child).			3.80

<i>Assessment patterns</i>	.69***	
They show no interest in the child's school results or in other performances.	***	1.36
They evaluate the child very rigidly and express little satisfaction with her performance (e.g., evaluations that may occur are harsh and critical).	*	2.14
They exhibit a negativistic and hostile evaluation pattern of the child (e.g., the adult tells her that everything she does is wrong).	***	2.58
They tell the child that she must be blamed for family and/or marital problems (e.g., they tell the child that she is the reason for their problems); they unjustly accuse her of having carried out very serious acts (e.g., robbery, assaults, extremely inappropriate behaviors).		3.92
<i>Aggressive verbal interaction</i>	.56***	
They scold, insult or ridicule the child (e.g., they call her "stupid, foolish", "dumb").	*	1.54
They prohibit the child from expressing ideas and actively participating in their activities, while verbally expressing to the child the impossibility of expressing her opinions,	*	2.04
They scream, plead for plagues, and call very offensive names to the child (e.g., "bitch," "prostitute," "despicable").	***	2.62
They verbally threaten the child, terrorize her, and create a climate of fear (e.g., they say they will abandon her, they will give her up for adoption, they convince her they will hurt and injure her).		3.79
<i>Age appropriate autonomy</i>	.11***	
They demand from the child an excessive responsibility (e.g., she carries out heavy or dangerous work for his age, she is absent from school to take care of her siblings).	n.s.	1.99
They frustrate the child from having normal social experiences or an age-appropriate socialization (e.g., by infantilizing the child, by forbidding her to play with friends, by preventing her to have friendly relations).	n.s.	2.33
They expect the child to assume responsibilities beyond her age or development (e.g., to take care of a sibling or the household) and refuse to acknowledge the legitimacy of her needs (e.g., they do not help, they do not recognize her problems)	n.s.	2.70
They impose on the child such achievement levels and such inappropriate expectations (excessive or limited) that the child suffers negative consequences (e.g., the child feels a misfit or a "failed person").		2.98
<i>Coercive/tough discipline methods</i>	.68***	
They use fear or intimidation as their primary method of discipline.	***	1.34
They close and isolate the child for long periods (e.g., at home, in the bedroom).	***	2.14
They use heavy or long punishments (e.g., they do not provide her a meal as a punishment, squeeze the child's nose so that she eats, forbids her to drink because of enuresis, do not allow her to leave, do not allow her to talk to people she cares about).	***	2.64
They close and isolate the child in compartments with poor light, temperature, ventilation and space. They tie the child's hands and feet to a chair or table or put her inside a box.		3.88
<i>Context of Socio-moral development</i>	.63***	
They allow the child to witness adult activities in inappropriate places for her age (e.g., they take the child to wine parties, adult bars or other unfamiliar situations).	***	1.16

Adults accomplish unlawful behavior in the child's presence or in a way that she knows it (e.g., tax offenses, theft, drugs or stolen materials sale).	*	2.49
They know that the child is involved in illegal activities but do not interfere (e.g., even informed, they ignore episodes of vandalism, theft or drinking).	***	2.68
They reinforce child's antisocial behaviors (e.g., violence and/or theft), encourage her to engage in destructive behaviors (e.g., alcohol consumption, inappropriate medications or drugs), or engage the child in illegal situations (e.g., child's work or begging).		3.67
<i>School monitoring</i>		.76***
They accompany the child's school life in an insufficient or inadequate way (e.g., regarding school materials, learning, schedules, grades, absences, behavior and conventions in the school setting).	***	1.42
They allow the child to stay at home and not to go to school, up to 25% of absences.	***	1.86
They allow the child to stay at home and not to go to school, performing between 25% and 50% of absences.	***	2.73
They allow the child to miss school classes most of the time, more than 50% of absences, or even to drop out.		3.99
<i>Physical hygiene and wellbeing</i>		.58***
They keep the child looking dirty (e.g., she does not take a bath, she does not wash her head or teeth, she stinks, has parasites and/or fleas).	***	1.25
They limit the child's normal functioning due to hygiene reasons (e.g., she is discriminated against or isolated by other children because of her appearance, smell or parasites).	**	2.39
They keep the child in poor hygiene conditions (e.g., chronic parasite problems, continued contact with urine), and may cause her health problems (e.g., burnt or bruise skin).	***	2.73
They let the child have health problems or injuries due to her hygienic conditions (e.g., skin diseases, infected skin injuries).		3.63
<i>Clothing</i>		.49***
They dress the child in age-inappropriate clothes and / or make it impossible for her to move around at ease (e.g., the clothes are so small that they restrict their movements or are so large that they stumble or have difficulty holding them).	***	1.46
They dress the child with dirty or uncared clothes (e.g., the child does not change underwear and/or outdoor clothes; they are poorly washed, smelly or torn).	***	2.09
They put the child at risk for illness due to lack of hygiene or inappropriate clothing (e.g., the child wears light clothing, walks barefoot or without a jacket in the winter, warm clothes in the summer, walk in wet clothes and let them dry on her body).	***	2.94
They let the child fall ill because of lack of or excessive clothing or poor hygiene in clothing (e.g., the child presents body puffiness or infections due to inappropriate underwear or to non-diaper change).		3.52
<i>Housing and hygiene conditions</i>		.68***
They keep the house dirty (e.g., the trash is not thrown out, there are dirty dishes, the floor and/ or walls are very dirty, filthy mattresses).	***	1.31
They allow the child to sleep, eat or play in inappropriate conditions (e.g., they live in a part of an apartment, in rooms shared by several persons, they have no beds or mattresses, no electricity, water, electricity, or heating).	***	1.91
They keep the child in a physical environment whose hygiene and / or habitability conditions are poorly hygienic and may cause health problems	***	3.17

(e.g., spoiled food and accumulated litter, cockroach infestation, rats or fleas, wooden house with fungus, moisture or where rain comes in).		
They live in cars, under bridges, or without permanent housing, with no hygiene and habitability conditions causing health problems to the child (e.g., respiratory infections, rat bites).		3.60
<i>Physical health monitoring</i>	.76***	
They irregularly or inappropriately comply with the medical guidelines for the child (e.g., they do not provide medicines for minor health problems).	n.s.	1.51
They miss medical routine appointments or the child's vaccines are overdue.	***	1.75
They miss medical treatment for child's moderate health problems (e.g., vision or hearing problems), give the child inappropriate or excessive medications without medical prescription (e.g., they give the child sedatives to control her).	***	2.76
They miss medical treatment for serious injury or illness (e.g., tuberculosis, HIV, the child is not transported to emergency in severe situations), or they consume drugs or alcohol during pregnancy (e.g., the child is born with alcohol or drug syndrome).		3.98
<i>Mental health monitoring</i>	.70***	
They take the child to specialists (e.g., psychologist, speech therapist) for minor behavioral or developmental problems but are irregular and inconsistent in complying with their recommendations (e.g., no required attitude changes are observed).	***	1.27
They remain indifferent to the professionals' call of attention to certain characteristics of the child's behavior or functioning (e.g., they do not follow professionals' advice for small issues of socio-affective and /or school functioning).	***	2.13
They ignore the treatment of a child's psychological or behavioral malfunction (e.g., the malfunction interferes with the child's ability to develop peer relationships and appropriate school functioning).	***	2.75
They remain completely indifferent to the diagnosis or treatment of situations in which the child will have potentially irreversible developmental and behavioral problems if they are not attended (e.g., serious learning difficulties, language development problems, isolation or severe aggression).		3.85
<i>Feeding</i>	.75***	
They give little food to the child and /or some meals are incomplete.	***	1.14
They provide meals to the child, but she does not gain weight or does not grow as expected for her age (e.g., poor progress in weight or weight-status) at the risk of the child's malnutrition or gastric problems.	*	2.34
They allow the child to miss two or more consecutive meals that may affect her performance (e.g., concentration problems at school because of hunger).	***	2.66
They provide the child such a poor or insufficient nutrition that the child suffers physical consequences such as weight loss, food poisoning episodes or gastroenteritis problems (e.g., diarrhea), severe malnutrition patterns, or growth retardation due to non-organic causes.		3.86
<i>Developmental needs</i>	.65***	
Inadequate supervision of the child, notwithstanding some of her behavioral problems (e.g., impulsive behavior, hyperactivity).	***	1.14
Inadequate supervision of the child, notwithstanding some of her physical, cognitive or social development problems (e.g., small physical or mental deficiency, learning difficulties).	***	2.31

Inadequate supervision of the child, notwithstanding her problematic history of physical and /or cognitive development (e.g., severe physical or mental impairment).	***	2.95
Inadequate supervision of the child, notwithstanding her very problematic history of socio-emotional development (e.g., engages in dangerous acts such as suicide at the risk of life).		3.60
<i>Supervision</i>	.87***	
They leave the child alone for short periods of time.	***	1.12
They leave the child alone for reasonable periods of time.	**	2.00
They leave the child alone at night or by day but for long periods of time.	***	2.96
They leave the child alone all night long or for very long periods of time.		3.92
<i>Surroundings security</i>	.68***	
They allow the child to stay for short periods of time in an environment where there are no immediate situations of danger, but in which there may be some risky situations (e.g., closets at the child's hand, with medication).	***	1.42
They allow the child to remain for short periods of time in an environment where there are immediate dangerous situations (e.g., playing in an area where there is broken glass).	*	2.21
They allow the child to stay for several hours in an unsafe place (e.g., a place where cars enter and exit).	***	2.40
They allow the child to stay in a very dangerous area (e.g., she may play on a road where she may be run over, she may play on a house roof or in an old building, she may fall from a window, she may get burned or drowned).		3.97
<i>Alternative monitoring</i>	.79***	
When they are absent for short periods of time they leave the child with substitutes whose suitability may be doubted (e.g., young teenagers or elders with medium impairment).	**	1.39
When they are absent for several hours they leave the child with substitutes whose company is inadequate (e.g., poorly attentive, they do not respond to the child's needs).	**	1.71
When they are absent for extended periods of time, they leave the child with strangers or with someone they do not trust (e.g., someone who is known to drink a lot, to be extremely absent-minded, or to have a known history of violence).	***	3.07
They push the child away from home, on the street, to live by herself, without alternative host and support (e.g., the child ran away from home and they do not care about her whereabouts or solving the situation).		3.84
<i>Sexual abuse</i>	.90***	
They expose the child to sexual activities or stimuli without directly involving her (e.g., the child looks at pornographic materials, watches sexual activities because of lack of adult preclusion, sex is addressed out of context).	***	1.09
They make direct verbal proposals of sexual activities to the child, exhibit the genitals, or masturbate in front of the child.	***	2.08
They cause physical contact, without penetration, for their sexual gratification (e.g., touching, handling or masturbating).	***	2.85
They complete a violation, with or without physical violence. They have sex with the child (e.g., coitus, oral sex, anal sex or other forms of sodomy). They allow or encourage the child into prostitution, anomalous sexual practices or pornography.		3.99

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; $M = \text{Mean}$

Table 2

EFA Factor pattern structure and internal reliability

Label	Items	Factor Structure				
		M	SD	1	2	3
Physical Neglect	17. Housing and hygiene conditions	2.27	1.40	.789	-.063	-.071
	1. Physical hygiene and wellbeing	2,12	1.40	.787	-.039	-.039
	2. Clothing	2,09	1.40	.786	.015	.002
	10. Feeding	2.06	1.44	.727	.101	-.026
	18. Surroundings security	2.46	1.61	.387	.147	.270
	11. Physical health monitoring	2.23	1.46	.376	-.084	.365
	20. Context of Socio-moral development	1,81	1.22	.369	-.018	.256
	19. Alternative monitoring	2.29	1.41	.356	.172	.244
Physical and psychological abuse	15. Physical violence methods	1.60	1.06	-.006	.848	-.075
	14. Aggressive physical interaction	1.63	1.06	-.040	.846	-.126
	8. Aggressive verbal interaction	2.33	1.62	.052	.626	.148
	7. Coercive discipline methods	1.90	1.20	.012	.575	.157
Psychological neglect	4. School monitoring	2.47	1.46	-.074	-.106	.717
	9. Mental health monitoring	2.85	1.60	.036	.013	.662
	3. Developmental needs	2.43	1.45	.019	.017	.625
	16. Supervision	2.53	1,51	.087	.130	.510
	6. Age appropriate autonomy	2.58	1.69	.044	.267	.462
	12. Relationship with attachment figures	2.86	1.31	.121	.143	.421
Cronbach's α				.86	.80	.79
% of explained variance				32.8	9.7	4.8
M				2.18	1.87	2.62

Table 3

Comparison between CFA models

Model	χ^2	gl	χ^2/gl	CFI	PCFI	RMSEA	SRMR
1	721.787	132	5.47	.83	.72	.10	.08
2	477.949	127	3.76	.90	.75	.08	.07

Note. Model 1 = model with no correlations between residual errors; Model 2 = model with correlations between residual errors

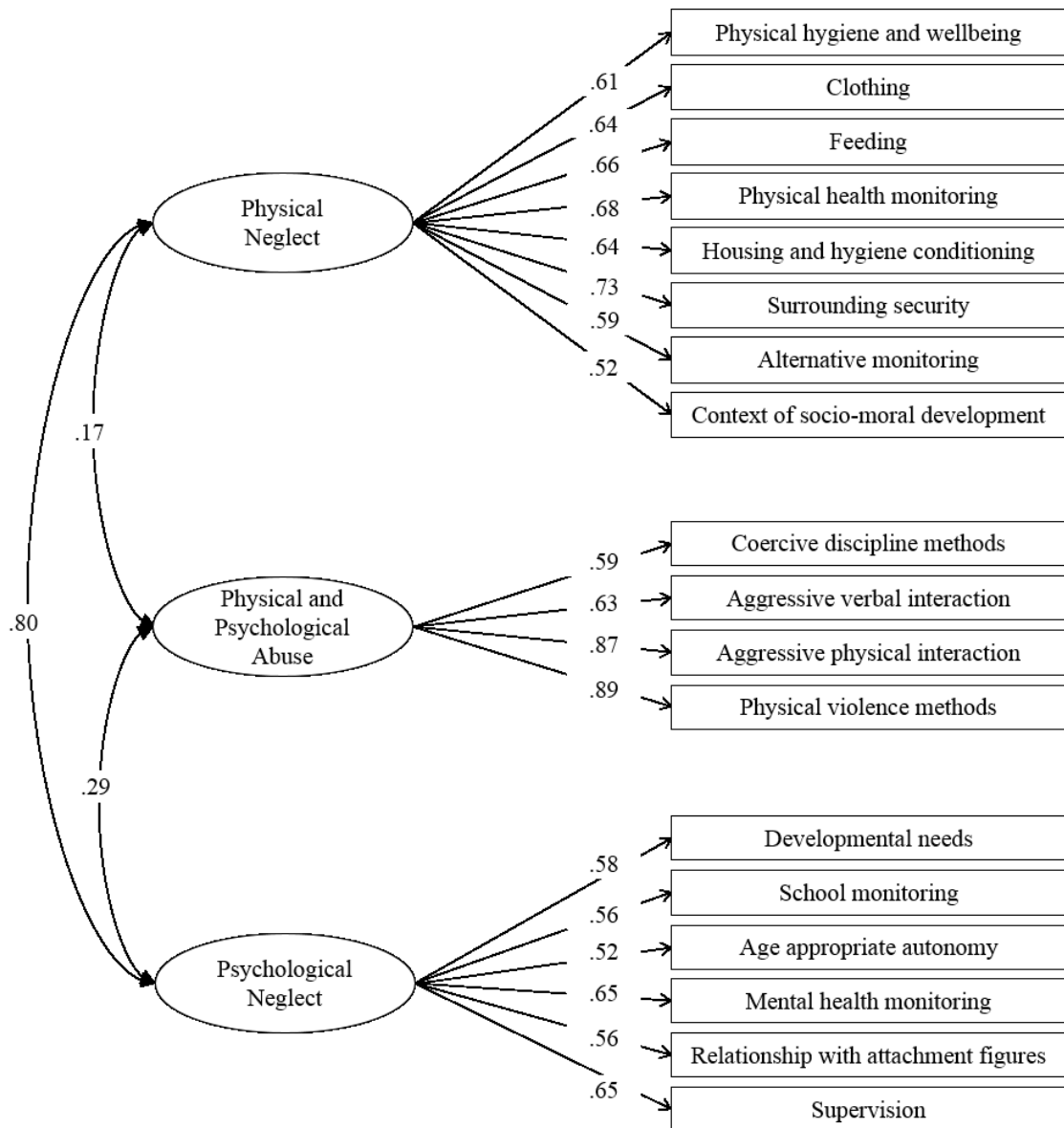


Figure 1. Standardized factor structure and correlations of the MSQ