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# **Structural Validity and Internal Consistency of the Adolescents and Children Risk of Abuse and Maltreatment Parental Scale (ACRAM-PS)**

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## **Abstract**

There is a clear need for developing a comprehensive, unbiased, and psychometrically sound tool to assess child maltreatment. The aim of this study is to examine the structural validity, internal consistency, and convergent validity of a newly developed child maltreatment assessment instrument. A total of 286 professionals of the child protection system participated in the study, completing a total of 645 cases of children and adolescents. The Adolescents and Children Risk of Abuse and Maltreatment Parental Scale (ACRAM-PS), the Childhood Trauma Questionnaire Short Form (CTQ-SF) and other demographic variables were measured. Structural validity, internal consistency, and convergent validity of the ACRAM-PS were tested. This scale obtained good structural validity, internal consistency, and convergent validity as hypothesized patterns of correlations occurred as expected. This instrument implies a considerable improvement as it is

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comprehensive, psychometrically sound and, it has been articulated by its own users. It can significantly contribute to establish a common language among professionals, improve multidisciplinary communication, and optimize prevention, detection, and early intervention in child maltreatment.

### **Keywords**

child maltreatment, child abuse, child neglect, parenting, psychometrics, validation

## **Introduction**

Child maltreatment is a severe social problem that requires strong efforts to implement intervention strategies. This phenomenon impacts millions of children, young people and their families, negatively affecting their physical, cognitive, emotional, and social development (Fallon et al., 2010). In fact, the numbers are reaching epidemic levels since nearly 75% of children aged 2 to 4 years have been or are victims of maltreatment perpetrated by their parents or caregivers (Evans et al., 2014; World Health Organization [WHO], 2020). Child maltreatment is a global problem that causes suffering and sorrow as it increases the probability of emotional disorders (Kisely et al., 2018), drug abuse, risky sexual behavior, and suicidality (Norman et al., 2012). A recent systematic review concluded that being exposed to multiple forms of maltreatment increases the odds to more than three times the probability of developing mental disorders (McKay et al., 2021). It also increases probability of abusing others as an adult; therefore, creating a generational chain of violence. If not prevented, child maltreatment can leave lifelong consequences that do not only impact children and their families but can also affect the economic and social development of a country (WHO, 2020). For these reasons, early detection and assessment is paramount to prevent all the social, personal, and economic consequences of child maltreatment (Tufford et al., 2021; van der Put et al., 2017).

There is a general agreement in both scientific literature and public organizations about the need for developing comprehensive, unbiased, and psychometrically sound tools to assess child maltreatment (Brumley et al., 2019; Gabrielli & Jackson, 2019; Kugler et al., 2019; Meinck et al., 2016; UNICEF, 1989). The potential value of these tools derives from the ability to improve early interventions and prevention and therefore, the quality of life of children, adolescents, and their families. In the same line, it also optimizes the performance and coordination of professionals involved in the child

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protection system, allowing them to react and intervene rapidly (Bartelink et al., 2015; Zeijlmans et al., 2017). Hence, there is a need for enhancing the value of multidisciplinary tools that imply a therapeutic, modular, and multi-focal approach for a rigorous prevention, detection, and assessment of child maltreatment (Bentovim et al., 2021; Forsner et al., 2021).

However, child maltreatment is a complex, multidimensional, and heterogeneous construct that encompasses a great number of risk factors as caregiver's characteristics, neglect of several types, abuse, corruption, labor exploitation, etcetera (Guastaferrero & Lutzker, 2021; Zhang et al., 2022). There is a lack of consensus about its definition and subsequent operationalization: some definitions include broad terms which are hardly operationalizable (WHO, 2020); some do not specify subtypes of maltreatment (Runyan & English, 2006); and some consider risk as a potential harm, while others only address existent harm to the child or adolescent (Fallon et al., 2010). These problems have transcended to child maltreatment assessment and hindered the successful development of rigorous tools to guide professionals' interventions and decision making.

Furthermore, child maltreatment assessment presents additional challenges regarding its psychometric properties. A recent systematic review performed by Saini et al. (2019) examined the psychometric quality of 52 child maltreatment instruments obtaining strong to moderate evidence for only eight of them (15% of the total examined). Thus, if we scrutinize these results, we can perceive that there is a noticeable lack of information regarding most psychometric properties, especially for responsiveness, measurement error, measurement invariance, and structural validity (Saini et al., 2019).

Available instruments tend to assess very specific types of maltreatment practices rather than the multidimensional construct (Calheiros et al., 2021). Additionally, very often instruments developed for research purposes do not generalize to non-research settings (Slack et al., 2003). This results in poor assessment and decision-making in child protection system due to the inconsistencies (as different reports and different final decisions on similar cases) and lack of coordination found among different professionals involved in the child protection system (Calheiros et al., 2016; Jackson et al., 2019). This inconsistency has been found to be higher when child maltreatment does not present clear and observable damages to the child or adolescent (Gabielli et al., 2017). A number of reports show a gap between the real incidence of maltreatment and the reported cases. This reveals that the lack of informing derives into moral, legal, and ethical conflicts in the decision-making process (Forsner et al., 2021; Feng et al., 2012; Steen & Duran, 2014; Toros & Tiirik, 2016).

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The Adolescents and Children Risk of Abuse and Maltreatment (ACRAM) is a comprehensive modular assessment instrument that emerges from the current need of professionals involved in the child protection system to have a psychometrically sound, objective and validated tool for early detection of child maltreatment. This instrument is developed in the context of Spanish child welfare system, in which, there is an untangled interdisciplinary system. Despite the fact that the protection regimes depend on the Social Services Welfare System, there are other systems connected to it which are absolutely essential and have enough resources to intervene in the situation of risk and/or neglect of children and adolescents (Verde et al., 2019). These systems are composed by institutions with competences in prevention and child protection, but also with direct connections to other public municipal and autonomous administrations, for example in the field of justice, public administrations, the educational system, housing, and the health and mental health systems (Horno, 2006). Therefore, although it is the Social Services that must respond in the first instance, they are not the only ones, as the rest of the welfare systems must also offer collaboration, coordination, and resources for the protection of children and adolescents (Garcia-Castilla et al., 2022). In this sense, not only the organizations, but the professionals who operate in them, need to be coordinated in the face of emergency and risk actions, in addition to sharing a common language that facilitates the progress of shared interventions, connecting the intervention processes with short-, medium-, and long-term objectives and joint evaluations. Consequently, it is not only about the representativeness of a single system, but about the articulation of different welfare areas and resources that must necessarily be connected in order to develop successful actions at the personal (children), family, and community (environment) levels (Martín-Cabrera & Suárez-Martín, 2018).

Thus, the ACRAM emerges as a response for the current needs of the Spanish welfare system. This instrument is a battery of questionnaires designed to assess child maltreatment as a multidimensional construct. It examines both static and dynamic risks, as well as protective factors in order to assess effectiveness of intervention programs, chronicity, and severity of risk. It is composed of three sections: The first section of this battery is focused on parenting behaviors and upbringing patterns Adolescents and Children Risk of Abuse and Maltreatment Parental Scale (ACRAM-PS), while the second assesses community risk factors (Adolescents and Children Risk of Abuse and Maltreatment-Community Factors Scale, ACRAM-CFS) and the third focuses on protective factors for child maltreatment (Adolescents and Children Risk of Abuse and Maltreatment-Protective Factors Scale ACRAM-PFS). Additionally, there is a Supplementary section focused on

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specific risk factors for foreign unaccompanied minors. The aim of this study is therefore to examine the structural validity, internal consistency, and convergent validity of the first section of the ACRAM-PS. This first section is very homogeneous, in the sense that it comprises risks present at a caregiver level, and has to be studied separately from other contexts of maltreatment. To our knowledge, this instrument is the first instrument developed by professionals and aimed to be used in professional settings to be psychometrically validated.

## **Method**

### *Design and Procedure*

The current study is embedded in a research project aimed to develop and validate a child maltreatment instrument for different professionals from the child protection system and other areas connected to it, such as social services, education, health, and housing in the Valencian Community (Spain). Specifically, this is the first cross-section of a longitudinal three-moments longitudinal study, taking place from 2020 until 2022.

The ACRAM went through several stages of content validation described in Navarro-Pérez et al. (2023), in which the initial content of items and theoretical structure was established based on a number of interviews, focus groups, and groups of experts in which both quantitative and qualitative information was collected. Once content validity and the final theoretical structure of the instrument was established, the instrument was tested on real children and adolescents assessed by social services professionals from the family, childhood, and adolescence area, who completed demographic information on the ACRAM and the Childhood Trauma Questionnaire Short Form (CTQ-SF) (Bernstein et al., 2003), for later convergent validation. Involved professionals had to complete an online version of the ACRAM instrument regarding current cases they were following or recently closed cases they had intervened with.

This research met APA's ethical standards and it was approved by the Ethical Commission of the Valencian Government (CSV: HYH5NVSA-Y85ZSB11-RML6ZCYX). All data on the children were anonymous, and all professionals signed informed consents.

### *Participants*

A total of 286 professionals of different services of child protection system participated in the study, completing a total of 645 complete cases of children



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and adolescents. There were no missing responses, as the online form of the ACRAM was set by default to not allow any missing responses; however, they had the possibility of answering each indicator with the option “information could not be gathered,” which was treated as missing in the analyses at the indicator (item) level. A variety of professional roles participated, with the aim of having heterogeneous perspectives of assessment. Professionals were mostly psychologists (24.74%), educators (21.95%), and social workers (19.98%), although different roles of technicians also participated (administering and re-evaluating cases in collaboration with social workers).

Regarding children and adolescents, from the total of the 645 cases, 41.9% were girls, 57.5% boys, and 0.6% classified as other gender. Mean age of the sample was 12.12 years old ( $SD = 5.21$ ) encompassing an age range from 0 to 18 years old. Nationalities of participants were very diverse, comprising a total of 35 different nationalities in this sample. The most common nationalities were Spanish (58%) and Moroccan (5.3%). All participants were involved in the welfare system in some way. Participants who were not recent cases were excluded as there might be inaccuracy of professionals recalling cases they have closed months before the study. Professionals were taught to select cases with a wide range of severity.

## *Instruments*

*The ACRAM.* It is a comprehensive instrument composed of 97 risk/protection indicators divided into three general sections: (a) Risk factors associated with parental/caregiver behavior (ACRAM-PS); (b) Risk factors associated with the community factors (ACRAM-CFS); and (c) Protective factors (ACRAM-PFS) (Navarro-Pérez et al., 2023). Additionally, there is another scale assigned to foreign unaccompanied minors. In this study, Section “Introduction” is examined. This section is composed of 15 conceptual dimensions and a total of 51 indicators. Response format has four options: “Information was not gathered,” “There is clear evidence it does not occur” (0), “There are signs it might occur, but it cannot be confirmed” (1), and “There is clear evidence it does occur” (2). For psychometric assessment of the scale “Information was not gathered” is treated as a missing value, because there was no option to get information on the indicator. Examples of items of each factor are specified in Table 1. Additionally, conceptualization of each factor is explained in the manual of the tool.

*Childhood Trauma Questionnaire—Short Form.* This is one of the most commonly used instruments in research in the last years (Bernstein et al., 2003; Madison et al., 2020) and one of the most validated tools as well (Georgieva

**Table I. Examples of Items of the First Section of the DAP 360°: Parental and Caregiver Factors.**

Factor	Final Factor Structure (no of items)	Example
F1 + F9	Parental variables (6) + Corruption (1)	"The primary caregiver has other children in the child protection system (with declaration of risk and/or neglect)."; "The primary caregiver has an asocial model (violence toward other people, drug trafficking, criminal behavior, etc.) and encourages the child to follow his or her example."
F2	Neglect of physical needs (8)	"Lack of hygiene in the child, caused by the primary caregiver (baby's diapers are not changed regularly, baby has not been washed in a while, diapers are not changed regularly, the child has not taken a shower for a considerable time, serious oral and dental neglect. . .), significantly affects the different areas of their his/her development (health, socialization, etc.)."
F3	Neglect of safety needs (8)	"The primary caregiver does not adequately supervise according to the child's age and needs (they do not know where he/she is, has run away from home, has not needs of the child (they do not know where he/she is, he/she has run away from home, has not indicated where he/she has gone or what he/she is doing, makes inappropriate use of the new where he/she has gone or what he/she is doing, makes inadequate use of new technologies)."
F4	Neglect of educational needs (2)	"The child does not attend school on a regular basis, and absences from school are excused and is consented to, covered up, or encouraged by the primary caregiver."
F5	Neglect of mental needs (6)	"The primary caregiver does not show expressions of affection and love (keep in mind that there may be different expressions depending on the culture)."
F6	Physical maltreatment (7)	"The child has external or cutaneous injuries and/or burns and/or sprains, dislocations, or fractures that have occurred in the family environment."
F7	Emotional maltreatment (7)	"The primary caregiver threatens the child with abandonment or disproportionate punishment on a regular basis, with the intention of generating fear in the child."
F8 + F12	Instrumentalization (3) + Abandonment (1)	"The child is used by one of the caregivers to get something from the other caregiver (e.g., financial support, material goods, etc.)."; "The child has been abandoned by the primary caregiver with no intention of returning."
F10	Sexual abuse (10)	"The child has been used for pornographic activities, prostitution or for the use of his or her image in social networks (including those promoted by the caregiver or by third parties with the caregiver's consent)."
F11	Prenatal maltreatment/risk (8)	"The baby was born with fetal alcohol syndrome."
F13	Labor exploitation and begging (2)	"The child engages in begging, incited/promoted by the primary caregiver."
F14	Parental inability to control the child/adolescent's behavior (6)	"The child manifests behaviors of serious risk to himself/herself and others despite the involvement of primary caregivers: Has a serious health/behavioral disorder/severe substance addiction and/or other serious health/ behavioral/severe substance addiction and/or other issues (gambling, ICT, etc.), which the primary caregivers are not able to adequately guide/manage."



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et al., 2021). It is a self-report retrospective measure composed of 25 items, and 3 additional items detecting minimization and denial. The questionnaire measures five types of child maltreatment composed of five items each: emotional abuse, physical abuse, sexual abuse, physical neglect, and emotional neglect. Response format is a Likert scale ranging from “never true” (1) to “very often true” (5). In this sample, omega measure of internal consistency for each factor was: 0.938 for emotional neglect, 0.967 for sexual abuse, 0.967 for physical abuse, 0.905 for emotional abuse, and 0.730 for physical neglect.

*Other Demographic Questions.* Other demographic information was requested as the type of institutional resolution, number of siblings, gender, age and others.

### *Statistical Analyses*

In order to test for structural validity, several Confirmatory Factor Analyses (CFA) were specified for each dimension that compose the parental and caregiver risk factors battery of the ACRAM-PS. Analyses were computed separately for each factor as performing an overall CFA was virtually impossible due to the lack of statistical power considering the amount of indicators to be included in the analysis. Two factors (corruption and abandonment) were composed of only one item, and therefore, had to be included as a part of a factor attending theoretical reasons and because they presented high correlation with these factors. This scheme of analyses gave place to 12 separate parental and caregiver risk factors and accordingly to 12 different CFA models. In order to rearrange the single-indicators dimensions into a factor, a group of experts in the topic was consulted. Additionally, all tested factorial structures were the results of the theoretical structure which resulted from the content validation process.

The 12 CFA models were estimated with Weighted Least Squares Mean and Variance corrected, in order to overcome the strong non-normality and ordinal nature of the data (Finney & Di Stefano, 2006). Model fit was assessed according to the recommendations of Hu and Bentler (1999). Therefore, the following indexes were examined: the chi-square statistic, the Comparative Fit Index (CFI), the Root Mean Squared Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Acceptable fit was established for CFI of at least 0.90, and RMSEA and SRMR less than 0.08 (Hu & Bentler, 1999).

Additionally, internal consistency of each factor was estimated with Cronbach’s alpha and McDonald’s omega indexes. Convergent validity was

calculated by correlating the ACRAM with a well-known child maltreatment scale (CTQ-SF; Bernstein et al., 2003) expecting to find high and positive correlations among the theoretically overlapping factors among both scales, and lower, but still positive correlations among the rest of the dimensions of the ACRAM instrument.

Data analyses were conducted with IBM SPSS Statistics (Version 26) and Mplus 8.7 (Muthén & Muthén, 1997–2018).

## **Results**

### *Descriptive Analyses*

Preceding the analysis of structural validity and internal consistency, a descriptive analysis of each factor was performed (see Table 2). For the sake of extension, descriptive statistics on items level can be consulted in the Supplemental Appendix section.

Firstly, it can be seen that all minimum and maximum values fell within the expected 0 to 2 range. Secondly, regarding mean distributions, we can observe that most means were located between 0 and 1, with the lowest mean being of Sexual Abuse (F10), and the highest being of Neglect of Mental Needs (F5). Additionally, if we focus on dispersion statistics, it can be observed that all factors fell within the range of 0 to 1, being the factors with the lowest dispersion Physical Maltreatment (F6), Sexual Abuse (F10) and Parental Inability to control the Child/Adolescent's behavior (F14); while the factors with the highest dispersion were Neglect of Safety Needs (F3), Neglect of Physical Needs (F2), and Abandonment (F12).

### *Structural Validity*

CFA were tested for each factor, except for factors 4 (Neglect of educational needs) and 13 (Labor exploitation and begging), since they were composed of only two items and a model cannot be identified with less than three indicators. All tested models were based on the previously established structure proposed by experts on the content validity phase (Navarro-Pérez et al., 2023).

All 10 established factors obtained overall good fit indices except for factors 3 and 11 (Neglect of safety needs and Prenatal maltreatment/risk). All CFI were excellent; however, some error indices might need further scrutiny. Fit indexes of all factors can be seen in Table 3. Additionally, standardized loadings were expressed as ranges for each factor (Table 4), for the sake of extension of the tables, while the complete table of loadings is attached as a Supplemental Appendix. To complement the overall fit information, standardized loadings

**Table 2.** Descriptive Statistics of the First Section of the DAP 360°: Parental and Caregiver Factors.

No	Initial Factor Structure (no of items)	N	Minimum	Maximum	Mean	Standard Deviation
F1	Parental variables (6)	622	0.00	2.00	0.622	0.495
F2	Neglect of physical needs (8)	566	0.00	2.00	0.348	0.529
F3	Neglect of safety needs (8)	564	0.00	2.00	0.622	0.601
F4	Neglect of educational needs (2)	600	0.00	2.00	0.356	0.571
F5	Neglect of mental needs (6)	574	0.00	2.00	0.801	0.649
F6	Physical maltreatment (7)	565	0.00	2.00	0.107	0.316
F7	Emotional maltreatment (7)	557	0.00	2.00	0.474	0.532
F8	Instrumentalization (3)	531	0.00	2.00	0.355	0.583
F9	Corruption (1)	494	0.00	2.00	0.259	0.588
F10	Sexual abuse (10)	580	0.00	2.00	0.071	0.273
F11	Prenatal maltreatment/risk (8)	493	0.00	2.00	0.260	0.452
F12	Abandonment (1)	583	0.00	2.00	0.295	0.657
F13	Labor exploitation and begging (2)	559	0.00	2.00	0.051	0.260
F14	Parental inability to control the child/adolescent's behavior (6)	589	0.00	2.00	0.611	0.559

  

	Final Factor Structure (no. of items)	N	Minimum	Maximum	Mean	Standard Deviation
F1 + F9	Parental variables (6) + Corruption (1)	621	0.00	2.00	0.622	0.495
F2	Neglect of physical needs (8)	566	0.00	2.00	0.348	0.529
F3	Neglect of safety needs (8)	564	0.00	2.00	0.622	0.601
F4	Neglect of educational needs (2)	600	0.00	2.00	0.356	0.571
F5	Neglect of mental needs (6)	574	0.00	2.00	0.801	0.649
F6	Physical maltreatment (7)	565	0.00	2.00	0.107	0.316
F7	Emotional maltreatment (7)	557	0.00	2.00	0.474	0.532
F8 + F12	Instrumentalization (3) + Abandonment (1)	531	0.00	2.00	0.355	0.583
F10	Sexual abuse (10)	557	0.00	2.00	0.071	0.273
F11	Prenatal maltreatment/risk (8)	493	0.00	2.00	0.260	0.452
F13	Labor exploitation and begging (2)	559	0.00	2.00	0.295	0.657
F14	Parental inability to control the child/adolescent's behavior (6)	589	0.00	2.00	0.051	0.260

are very important, and in our particular case all of them were quite large (with a very few exceptions), reinforcing the factor structure of the scale.

### *Internal Consistency*

Internal consistencies were calculated as Cronbach's alpha and McDonald's omega indexes (see Table 5). We can confirm that virtually all factors obtained

**Table 3.** Model Fit of the 12 Factors (Section I DAP 360° Parental and Caregiver Factors).

No	Factors (no items)	$\chi^2$	df	p	RMSEA [90% CI]	SRMR	CFI
F1 + F9	Parental variables (6) + Corruption (1)	57.251	14	<.001	0.070 [0.52, 0.090]	0.051	0.949
F2	Neglect of physical needs (8)	65.968	20	<.001	0.064 [0.047, 0.081]	0.042	0.994
F3	Neglect of safety needs (8)	219.335	20	<.001	0.133 [0.117, 0.149]	0.113	0.956
F4	Neglect of educational needs (2)	—	—	—	—	—	—
F5	Neglect of mental needs (6)	112.196	9	<.001	0.141 [0.119, 0.165]	0.055	0.990
F6	Physical maltreatment (7)	25.432	14	<.001	0.038 [0.011, 0.061]	0.062	0.983
F7	Emotional maltreatment (7)	74.034	14	<.001	0.088 [0.069, 0.108]	0.070	0.992
F8 + F12	Instrumentalization (3) + Abandonment (1)	0.331	2	>.05	0.000 [0.000, 0.045]	0.008	1
F10	Sexual abuse (10)	89.555	35	<.001	0.052 [0.039, 0.065]	0.234	0.990
F11	Prenatal maltreatment/risk (8)	92.148	20	<.001	0.086 [0.068, 0.104]	0.121	0.993
F13	Labor exploitation and begging (2)	—	—	—	—	—	—
F14	Parental inability to control the child/ adolescent's behavior (6)	59.474	9	<.001	0.098 [0.075, 0.122]	0.071	0.951

CFI = Comparative Fit Index; RMSEA= Root Mean Squared Error of Approximation; SRMR = Standardized Root Mean Square Residual.

**Table 4.** Ranges of Standardized Loadings of Items on Each Factor.

Factors (no of items)		Range of Standardized Loading
F1 + F9	Parental variables (6) + Corruption (1)	[0.418–0.758]
F2	Neglect of physical needs (8)	[0.695–0.952]
F3	Neglect of safety needs (8)	[0.621–0.927]
F4	Neglect of educational needs (2)	—
F5	Neglect of mental needs (6)	[0.622–0.971]
F6	Physical maltreatment (7)	[0.709–0.996]
F7	Emotional maltreatment (7)	[0.502–0.958]
F8 + F12	Instrumentalization (3) + Abandonment (1)	[0.268–0.895]
F10	Sexual abuse (10)	[0.320–0.978]
F11	Prenatal maltreatment/risk (8)	[0.654–0.990]
F13	Labor exploitation and begging (2)	—
F14	Parental inability to control the child/ adolescent's behavior (6)	[0.456–0.885]

an omega higher than .70, while only two factors obtained an alpha lower than .70. Considering that Cronbach's alpha is strongly influenced by the number of items, we stated internal consistency as acceptable.

### *Convergent Validity*

When it comes to convergent validity, we correlated our final factors with the five classic factors from the CTQ-SF (Bernstein et al., 2003). In order to accept convergent validity, we expected positive correlations among all factors, and we expected these to be higher among the factors that theoretically correspond in both instruments. Additionally, as there is a theoretical overlap and co-occurrence to some extent among most maltreatment subtypes, we expected still positive but lower correlations among the rest of the factors (See Table 6).

Our results show that these expectations are met since there were significant and positive correlations among almost all factors except for six correlations. The non-significant correlations are among factors which are not measured in the CTQ-SF.

Additionally, theoretically corresponding factors obtained the strongest correlations among them, except for our factor 5 (neglect of mental needs) which strongly correlated with its homologous factor in CTQ-SF (emotional neglect) but also correlated in a similar amount with physical neglect from the CTQ-SF. Correlations among the rest of the factors were still positive, but

**Table 5.** Internal Consistency Indexes.

Factors (no items)	Cronbach's Alpha ( $\alpha$ )	McDonald's omega ( $\omega$ )
F1 + F9 Parental variables (6) + Corruption (1)	.746	.831
F2 Neglect of physical needs (8)	.884	.961
F3 Neglect of safety needs (8)	.863	.944
F4 Neglect of educational needs (2)	.455	.749
F5 Neglect of mental needs (6)	.882	.940
F6 Physical maltreatment (7)	.739	.949
F7 Emotional maltreatment (7)	.823	.908
F8 + F12 Instrumentalization (3) + Abandonment (1)	.660	.832
F10 Sexual abuse (10)	.849	.939
F11 Prenatal maltreatment/risk (8)	.831	.977
F13 Labor exploitation and begging (2)	.887	.949
F14 Parental inability to control the child/ adolescent's behavior (6)	.718	.837

lower, as expected. In fact, the lowest correlations were between instrumentalization/Abandonment and Sexual abuse, prenatal maltreatment/risk with sexual, physical, and emotional abuse, Labor exploitation and begging with Physical abuse, and lastly, Parental inability to control the child/adolescent's behavior with Physical neglect. This correlation pattern is also expected, as these constructs are quite theoretically different and even impossible to co-occur as the case of abandonment and sexual abuse. Overall, convergent validity can be established.

## Discussion and Conclusions

The aim of this study was to examine the structural validity, internal consistency, and convergent validity of the first section of a comprehensive battery of tools aimed to assess child maltreatment. This study is a part of the process of developing a rigorous multidimensional instrument and software for professional use. It emerged as a response to the general agreement in both scientific literature and public organizations about the need for developing complete, unbiased, and psychometrically sound tools to assess child maltreatment (Brumley et al., 2019; Gabrielli & Jackson, 2019; Kugler et al., 2019; Meinck et al., 2016; UNICEF, 1989).

One of the main issues in child maltreatment assessment is that most available instruments assess very specific types of maltreatment (Calheiros et al.,

**Table 6.** Correlations with the CTQ-SF Factors.

Factors	CTQ F1 Emotional Neglect	CTQ F2 Sexual Abuse	CTQ F3 Physical Abuse	CTQ F4 Emotional Abuse	CTQ F5 Physical Neglect
F1 and 9. Parental variables + Corruption	.512**	.221**	.219**	.277**	.590**
F2. Neglect of physical needs	.399**	.117*	.167**	.235**	.558**
F3. Neglect of safety needs	.447**	.130**	.179**	.301**	.594**
F4. Neglect of educational needs	.217**	.103**	.042**	.186**	.231**
F5. Neglect of mental needs	.560**	.129**	.220**	.443**	.581**
F6. Physical maltreatment	.259**	.214**	.524**	.302**	.272**
F7. Emotional maltreatment	.477**	.220**	.382**	.607**	.432**
F8 and F12. Instrumentalization + Abandonment	.232**	.069	.091*	.172**	.110*
F10. Sexual abuse	.290**	.714**	.256**	.312**	.271**
F11. Prenatal maltreatment/risk	.231**	.072	.077	.030	.333**
F13. Labor exploitation and begging	.142**	.124**	.071	.137**	.241**
F14. Parental inability to control the child/ adolescent's behavior	.181**	.163**	.190**	.362**	.058

\* $p < .05$ . \*\* $p < .01$ .

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2021; Georgieva et al., 2021) and therefore are not as useful in professional practice as comprehensive multidimensional instruments. Additionally, even instruments that are developed for assessing the multidimensional nature of child maltreatment are rarely used in professional settings (Slack et al., 2003). This can be due to the fact that short-questionnaires are an oversimplification of reality which might be useful for screening purposes, but not for decision-making considering the complexity and sensitivity of the topic. In the same line, welfare agencies have strongly recommended the use of multidimensional instruments over the last decade (Wiklund, 2006). In order to overcome this issue, the development of this instrument involved professionals of the child protection system in its construction, who defined and distinguished between the different risk factors composing child maltreatment based on their professional experience (Navarro-Pérez et al., 2023).

The ACRAM-PS implies a considerable improvement in professional decision-making processes because it is a comprehensive and psychometrically sound instrument that has been articulated by its own users. This construction process supported its validity since it is professionals who are daily witnessing child maltreatment manifestations and its evolution over time through the different geographical zones and cultures. Despite the relevance of building on current existing research on child maltreatment assessment, taking into account professionals' experience is paramount in order to obtain a valid tool which accurately reflects this construct (Jack et al., 2021; Manful & Abdullah, 2021; Merrild & Frost, 2021). Thus, the structure defined by professionals was tested by means of CFA (first objective of the study) obtaining good results for all defined risk factors, therefore confirming that all included items are good representations of its theoretically assigned factor. This result additionally confirmed that conceptual structure of child maltreatment factors indeed exists in data gathered from 645 children and adolescents at risk, and therefore is evidence for the multidimensionality of the child maltreatment construct. Furthermore, when we compared our 12 factors structure to other already established child maltreatment instruments as the CTQ-SF (Bernstein et al., 2003), composed of five factors, we can observe that our factorial structure theoretically covered the five originally defined maltreatment factors defined by the CTQ-SF. Emotional abuse in the CTQ-SF is emotional maltreatment (F7) in the ACRAM-PS, physical abuse is physical maltreatment (F6), sexual abuse is named the same (F10), physical neglect is named as neglect of physical needs (F2), and emotional neglect is named as neglect of mental needs (F5). Additionally, our structure expands to other risk factors as other types of neglect (of safety and education), parental characteristics and their inability to control the child/adolescents' behavior; corruption, labor exploitation and begging, instrumentalization situations,



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abandonment, and even maltreatment situations that can occur to unborn babies. Furthermore, the ACRAM-PS can be confirmed as more suitable for professional use because it is exhaustive in terms of possible maltreatment situations. Decision-making in child protection has important consequences on children and their families (Forsner et al., 2021; Toros & Tiirik, 2016). Therefore, a comprehensive and scientifically rigorous instrument is needed to justify these decisions and take them in the most objective way possible. Additionally, the fact that this instrument is finally embedded into a computer software can greatly improve professionals' working experience in terms of time management, quick communication among professionals, and case reports elaboration.

Another issue in maltreatment assessment is the lack of psychometric information (Saini et al., 2019). For this reason, in this study, we explored three main psychometric properties of this new instrument: structural validity, internal consistency, and convergent validity. Regarding the second objective of the study, internal consistency was explored and all factors obtained good results in both alpha and omega. This result indicates that not only the theoretical structure is present, but items are representative of its respective factors. Once factors are established, they can be employed in research to explore the possible relationships of a given subtype of maltreatment with its predictive factors.

Finally, regarding the third objective of the study, acknowledging and exploring the comorbidity patterns between different types of maltreatment is important to understand how the different combinations of several maltreatment types can constitute a bigger risk factor for child and adolescents' health and psychosocial development, as stated by Pears et al. (2008). In fact, different types of maltreatment are related. This has already been stated in previous literature (Brumley et al., 2019; Calheiros et al., 2021) and confirmed again in this study by the relationships established by the ACRAM-PS factors and the CTQ-SF maltreatment types. In this way, there was an existing correlation not only between the conceptually matching factors but also between all the rest.

Our findings provide preliminary evidence for the reliability and validity of this emerging comprehensive instrument made by and for professionals. The need for this type of instruments is evident for several reasons. Firstly, it is because of current inconsistencies in maltreatment detection found among professionals involved in child protection system (Jackson et al., 2019). These inconsistencies are especially noticeable when there are no visible signs of immediate damage to the child, as it could be neglectful practices, for instance (Calheiros et al., 2016; Gabrielli et al., 2017). Hence, we believe that establishing a common language among professionals, with a psychometrically

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sound and reliable instrument can strongly improve the validity and efficiency of child maltreatment assessment, and consequently also the decision-making processes. Secondly, utilizing subjective criteria or utilizing instruments that do not have established psychometric properties is an extremely risky and unethical practice considering the massive consequences of decision-making processes for children, adolescents, and their families. Additionally, it also hinders the process of addressing consensual intervention objectives. Thirdly, it is an institutional duty to stay updated and provide their professionals with the best available resources to perform their job better (Cowley et al., 2018; Petrowski et al., 2021). The potential of implementing valid and reliable tools to professional practice derives not only from the improvement of the assessment and decision-making processes, but also from the optimization of resources, coordination, and communication among professionals and different institutions involved in child protection (Bartelink et al., 2015; Zeijlmans et al., 2017). Lastly, there is a need for a comprehensive instrument which includes all manifestations of child maltreatment and abuse (Calheiros et al., 2021; Runyan & English, 2006). This instrument attempted to consider all possible types of maltreatment updated to present day needs by including indicators referring to instrumentalization, parental inability to control the child's behavior, or items referring to technologies among others. These topics are mostly absent in most general child maltreatment instruments.

In addition, one of the strengths of this instrument is the fact that it is completed by professionals which increases the objectivity over any self-report questionnaire. Despite the fact that self-report instruments are the most common type of administration in research, they present several problems: the first is that there is a big subjectivity problem when it comes to assessing somebody's own subjective experience, and even more when it comes to parental abilities (Paulhus & Vazire, 2007); the second is that the interpretation of items can greatly vary among people (Sprague-Jones et al., 2020), since they have not received a common training in the instrument; and the third is that participant's origin and culture can influence their answers due to the different conceptualizations of good child education across cultures (Vachon et al., 2015). Even when all instruments present a certain amount of subjectivity, decision-making based on observable and proven facts can greatly reduce subjectivity.

In fact, this instrument can positively impact practice and decisions-making by three different ways: (a) Utilizing a standardized measure allows comparison among the same case in time (therefore allowing the study of chronicity) and also among other cases or groups of populations (allowing also comparison among severity); (b) Having available objective indicators that have been scientifically tested can provide professionals with security in

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decision-making and even certain legal support if the instrument is implemented by an institution; (c) Having available software that allows interprofessional real-time communication can greatly reduce time ranges of assessment and objective planning among professionals.

Additionally, this study addresses diversity in participants as children and adolescents from up to 53 nationalities joined this study encompassing cases from all four continents. This variability allows us to explore risk factors for maltreatment in diverse cultures and acknowledge different experiences and patterns of child maltreatment. Including diverse samples is paramount to ensure a comprehensive understanding of this construct, as cultural norms, values, and practices can strongly influence the perception and identification of child maltreatment (Korbin et al., 2017). Furthermore, these differences in cultures were also reflected in some indicators of this instrument, in which some cultural practices such as the risk of female genital mutilation were considered. Finally, although not in the current study, the ACRAM instrument has a specific section for assessing risk in unaccompanied children.

Despite our results, this study also presents several limitations. The first is the fact this is a very specific sample of children and adolescents at risk extracted from the Valencian Community (Spain), and therefore, it is not representative of other geographical areas and neither other collectives. A second limitation is the fact that only three psychometric properties were explored in this study. A robust validation of an instrument should also explore the instrument's capacity to detect change over time as well as additional psychometric properties such as invariance of measurement, hypothesis testing for construct validity, measurement error, or test-retest reliability as stated by the Consensus-based Standards for the selection of health status Measurement Instruments checklist for Patient-Reported Outcome Measures (Mokkink et al., 2018; Prinsen et al., 2018; Terwee et al., 2018). Lastly, although self-report instruments have been proven to be more objective (Paulhus & Vazire, 2007; Sprague-Jones et al., 2020), there are still caveats regarding professional training on the instruments as they should all receive the same training in order to minimize subjectivity in its administration.

Thus, future research should focus on overcoming the previously mentioned limitations by expanding to other geographical areas in order to ensure that the proposed psychometric properties remain similar. Hence, we would encourage future research to test this instrument in other areas and populations, as well as to incorporate the digitalization aspect of risk and its prevention considering its boom during the last years. Maybe this could be done by providing digital tools for professionals and training them in digital skills in order to effectively detect risks in these contexts, and especially during the last years of the pandemic (Crescenza et al., 2021; Picornell-Lucas &

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López-Peláez, 2022). Additionally, we suggest future research to further explore the structural conformation and psychometric properties of this new instrument.

In this study, we attempted to address some of the current assessment issues in child maltreatment across professionals involved in the child protection system. We provided information on the psychometric properties of the first section (Parental and Caregiver Factors) of an emerging child maltreatment assessment instrument. We strongly believe that providing professionals with comprehensive valid and reliable tools as a support for their decision-making processes can significantly contribute to establish a common language, improve multidisciplinary communication, and to optimize prevention, detection, and early intervention in child maltreatment.

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### **Supplemental Material**

Supplemental material for this article is available online.

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