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Running Head: Clusters of Abusive Parenting

Clusters of Abusive Parenting:

A latent class analysis of families referred to Child Protective Services in Portugal

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### Abstract

From the perspective of ecological models, it is suggested that a thorough behavior analysis of parental mistreatment and neglect is undertaken from a general approach to a more comprehensive and multi-dimensional perspective. Hence, the main goal of the present study was to determine if meaningful groups or clusters of abusive parenting in Portugal could be identified based on the characterization of the children and adolescents, their parents and context variables. An instrument was developed to assess variables of the children or adolescents, the family and the social context, all of which have been shown to be important in the literature. Child and Youth Protection Commissions from the whole of Portugal participated in the study, a total of 504 cases. Latent class analysis was applied in order to identify distinct parenting abusing behavior. The results showed four distinct clusters of families which are clearly defined in light of the types of risk and associated variables. The four groups are probabilistic and propose the composition of clusters with socio-demographic variables related to the types of risk. The significant interrelationships of different profiling characteristics are directly related to parenting abusing behavior. The results of this study confirmed our hypothesis of heterogeneous abusive parenting in Portugal. The findings yield useful policy-oriented results. Meaningfully organizing abusive parenting may be an important step not only in understanding the origins of abuse and neglect, but also in integrating this information into intervention models with children, young people and their families.

**Keywords:** Abusive Parenting, Negligence, Abuse, Latent Class Models, Childrearing & Child Care, Community & Social Services

## Introduction

The issue of abuse and neglect of children and young people in the family is not a recent phenomenon. However, the recognition of violence within the family, of the consequences for the victim(s), and of new forms of maltreatment, has set a new threshold that indicates the escalating need for analysis and reflection on this theme. Nowadays, few would dispute that child abuse and neglect is an important social problem.

In attempting to understand the determinants of child abuse and neglect, several authors have resorted to an ecological approach, with models such as those presented by Bronfenbrenner (1979, 1989, 1994), Belsky (1980, 1984, 1993), and Cicchetti and Rizley (1981). For example, in line with the present research, Belsky's model (1984) proposes three domains of determinants of parenting, namely, personal psychological resources of parents, characteristics of the child, and contextual sources of stress and support. It also defends that parenting results from a process of multiple direct and indirect effects wherein enhancers or buffers of risk of child maltreatment exert their influence. Thus, contextual stress variables (such as socio-economic strain) are posited to affect parenting directly or indirectly by impacting the caregiver's well-being and mobilizing his/her personal psychological resources to buffer the parent-child relationship from that stress in more or less effective way. Disruptive changes/ruptures in the family, marital and family discord, and domestic violence are also examples of stress variables which have been implicated in studies as potential factors that interfere negatively in the process of parenting, and that lead to actual changes in the quality of parent-child relationships, the lack of emotional availability, and the adoption of ineffective parenting styles (Belsky, 1984; Calheiros & Monteiro, 2007).

Overall, these models have emphasized the exploration of a multilevel set of variables which may influence parenting practices, including abusive parenting, namely at the ontogenetic, micro-systemic, exo-systemic and macro-system levels. They also highlight that

parental behaviors occur in a social, cultural and historical context (i.e., macro-systemic variables), which explains why certain parental behaviors (such as violence or lack of supervision) toward children and adolescents may sometimes be condemned as abuse or neglect in some cultures and not in others. Thus, it is relevant to explore parenting practices, and abusive parenting in particular, in distinct cultural contexts since they may represent different meanings and be expressed in distinct profiles.

Internationally, the literature has devoted considerable attention in recent years to the exploration of risk and protective factors for abuse and neglect of children and adolescents (e.g. Fontes, 2005; Howe, 2005; Meyers et al., 2011; Osofsky & Thompson, 2000). This research has revealed that certain characteristics of children/adolescents place them at more risk than others. For example, children between birth and five years of age are at particularly high risk of physical abuse, while pre-pubescence is the most vulnerable period for sexual abuse; economically disadvantaged groups and children with special needs also appear to be at higher risk for physical abuse; gender differences are most consistently found in child sexual abuse literature, with females more likely to be victims, and males to be perpetrators; and economic disadvantage has most frequently been found to be associated with child neglect (Calheiros, 2006; Meyers et al, 2011). A relatively large volume of literature has also become available on the characteristics of the adult perpetrator(s) and, while a single profile cannot be defined, certain attributes also have found to represent higher risk for abuse and neglect (depending on the type of abuse) (Calheiros, 2006; Meyers et al, 2011). Those which have been found to have significant associations with abuse parenting include the parent's personality, family history (e.g. history of abuse; Meyers et al, 2011), attitudes and beliefs toward the child and childrearing (such as attributional style and psychological responses to the child; e.g. Casanova et al., 1992), alcohol and substance abuse (e.g. Azevedo & Maia,

2006), and other demographic variables such as the age of the mother at birth and her level of education (Calheiros, 2006).

From the perspective of ecological models, it is suggested that a thorough behavior analysis of parental abuse and neglect is undertaken from a general perspective to a more comprehensive and multi-dimensional approach of the various factors that originate it. Specifically, considering parenting as a multidetermined phenomenon, the exploration of contextual stress variables assumes an important role in potentially decreasing the risk for abusive practices. In particular, in Portugal, a heightened level of socio-economic strain on families has been experienced in the last few years, given the financial crisis. Increases in socio-economic vulnerability, in unemployment, in alcohol abuse and in overall use of psychotropic medication have all been associated with the present macro-systemic situation of the country. Simultaneously, the prevalence and severity of family violence (such as domestic violence and child maltreatment) have increased and received more attention from both professionals/official organisms and the *media*, either because the actual number of cases is increasing, or due to better recognition of at-risk situations (see reports by the National Commission of Child Protective Services; and by the Commission for Citizenship and Gender Equality, CIG). Gender violence/domestic violence, which has a known impact on abuse parenting (Kitzmann, 2000; McGuigan & Pratt, 2001), has received particular attention due to its escalating severity (including deaths of female partners/mothers due to partner or former partner's violence).

Hence, the main objective of the present study was to determine if meaningful groups or clusters of abusive parenting in Portugal could be identified based on the characterization of the children and adolescents, their parents and context variables. In other words, we aimed to identify the dimensions around which abusive parenting is organized in our socio-cultural context. The current study attempts to address this by using a latent variable statistical

approach – latent class analysis (LCA) – to identify a typology of abuse and neglecting families collected by child protective system professionals nationwide. This analytic strategy uses shared relevant variables from the literature and from community practice reported by these professionals to identify groups, rather than fitting families into pre-determined categories. Meaningfully organizing abusive parenting may be an important step not only in understanding the origins of abuse and neglect, but also in integrating this information into intervention models with children, adolescents and their families.

### **Method**

*Participants.* Professionals from the National Commissions of Child Protective Services nationwide were recruited to participate in this study. The sample was composed of a total of 504 professionals with a mean age of 36 years, 82.7% of whom were female. They had worked, on average, for five and a half years in the Child Protection System, and their training was mostly in social services, psychology, or education. A summary of the characterization of the sample is presented in Table 1.

=== Table 1 about here ===

Each professional reported on a case of a child or youth referred to the Child Protective System, hence, the units of analysis were 504 cases.

*Measures.* A specific survey was developed for the study in collaboration with the National Commission for Child Protective Services. The survey was based on the literature (specifically, variables pertaining to aforementioned three domains in Belsky's model, 1980, 1984). Hence, the survey included questions on the parental figures (e.g., parents' history, relationship quality/conflict between parental figures), on the child (e.g., age, sex, emotional and behavioral problems, or physical/sensory and learning disabilities), and on the social and contextual milieu of the family (e.g., social network and support, employment). The survey was to be filled in by Child Protective Services care workers, regarding referred families.

They would also have to indicate the type of risk or abuse that prompted referral of the family to the service, considering the definition of abuse based on parental behaviors rather than their consequences (McGee & Wolfe, 1991; Strauss et al., 1998).

The final survey was thus composed of 12 groups of questions on each family, after obtaining socio-demographic characterization from the child care worker who completed the survey: (1) demographic information on the child or adolescents and family composition; (2) educational information on the child or adolescents; (3) presence of health and mental health problems of the child or adolescents; (4) type of risk or abuse that prompted referral of the family to the services, including exposure to family violence; (5) demographic information of the mother or primary female caregiver; (6) educational and professional information of the mother or female caregiver; (7) health information of the mother or female caregiver, including emotional, socio-behavioral and substance-abuse related problems; (8) demographic information of the father or second caregiver, if applicable; (9) educational and professional information of the father or second caregiver; (10) health information of the father or second caregiver, including emotional, socio-behavioral and substance-abuse related problems; (11) socio-economic characterization of the family situation, including income/employment/social security benefits and housing; (12) characterization of the social network and context, including social support, extended family, and neighborhood. The survey was composed of closed-ended questions, such as presence/absence of a certain variable or multiple choice.

*Procedure.* The project of the study was developed, presented and approved by the university department, assuring that all ethical requirements were fulfilled, including anonymity and confidentiality of the data of all the children/adolescents and families involved, as well as of the child care workers who actually participated in the survey. Following approval of the study, we contacted the National Commission for Child Protective Services in order to ask for



their collaboration. The Commission also approved the study and helped develop the final version of the survey, which was pilot tested. Finally, the survey was sent to all the local and regional commissions of Child Protective Services in Portugal, with a brief informed consent form and a request for their voluntary participation. Each team/local commission was to randomly choose up to four families referred to their services and have the care worker who had the most direct contact with each family fill out the survey based both on his/her interviews with the family in question and the Child Protective Service case file (which includes case reports, chart reviews and notes), as in DePhanfilis et al (2001). This procedure was chosen as to maximize fidelity of data as well as minimize self-report bias. Data was collected through an electronic survey database. Nationwide, out of the 308 municipalities in the country, information was obtained for 198, including continental territory and islands, which represented a 64% response rate.

*Analysis.* Latent class analysis was used to identify different risk profiles or clusters of abusive parenting (Goodman, 1974; Dayton, 1999; Hageaars & McCutcheon, 2002). The main idea underlying latent class analysis is that groups exist in the population with distinct patterns of parenting abuse, and that those groups can be un-mixed into clusters or groups known as latent classes based on their specific profile. This technique has been considered useful in risk behavior research in the identification of specific segments at risk (e.g., Petrenko et al., 2012; Cavanaugh et al., 2013; El-Gabalawy et al., 2013; Esmailzadeh et al., 2013; Lawson et al., 2013; Small & Weller, 2013). This technique identifies the size of the groups and its profiles in the population. Determination of the best number of classes was based on the Bayesian information criterion (BIC) as it provides good performance in retrieving the right model (Schwarz, 1978; Dias, 2006), where lower values indicate better fit. Thus, various models were set up, each with a different number of latent classes, and the one with minimum BIC was selected. Other log-likelihood statistics, the classification error,

entropy R-squared, and standard-R squared were considered to validate the selected solution. All analyses were conducted using SPSS 18.00, Latent Gold 4.5, and MATLAB 13. Multiple random start values were used (1000) to minimize the effect of local optima.

## Results

*Finding a meaningful cluster solution and selecting discriminant variables.* Model fitting began with a one-class solution, and the number of classes was increased successively up to a 10-class solution. Appendix A displays the results for our one to six-class estimates. It shows that all solutions have low classification error (<0.1%) and high entropy values. Entropy values range from 0 to 1 with values closer to 1.00 indicating greater class separations and homogeneity. Thus, high class entropy (>0.98) indicates high discrimination between classes. A four-class solution attained the lowest BIC, thus this model was chosen as the best fitting model solution. CAIC confirms this solution, whereas AIC and AIC3 favor at least 6 latent classes. Thus, this four-cluster model is the best fitting alternative and has a classification error of 0.5%, entropy R-square of 98.6% and a standard R-square of 98.9%. In this initial step of the analysis, and simultaneously to the selection of the number of latent classes, it is important to identify the important variables in defining the taxonomy. Wald statistics in Table 2 reveal that all variables are significant ( $p < 0.05$ ), i.e., all indicators discriminate between latent classes in a statistically significant way. The highest level of education attained by the mother was not significant ( $p=0.34$ ), leading to its removal from model and results in Appendix A.

=== Table 2 about here ===

Latent Gold provides the bivariate residual indicators (BVR) to check local independence assumption. A BVR value substantially larger than 1 suggests that the model falls to explain the association between the observed indicators. That is not our case as the

largest bivariate residual is smaller than 2.2 (results not shown). There was no evidence for a violation of the local independence assumption based on the bivariate residual analysis.

Table 3 summarizes the characteristics of each cluster in terms of risk indicators.

=== Table 3 about here ===

Cluster 1 (35.1% of the sample) contained child/adolescent victims of physical neglect (0.70), lack of parental supervision (0.86), emotional neglect (0.98) and educational neglect (0.86). Thus, a given child or adolescents had higher probability of becoming victim of neglecting parental behaviors. Children grouped in cluster 2 (26.2% of the sample) reported a broad range of typologies of risk, including physical maltreatment and sexual abuse. This cluster showed the highest probability of physical maltreatment (0.81) and sexual abuse (0.18). Cluster 3 (19.8% of the sample) did not show a clear pattern of abusive parenting typology; rather, it profiled the least severe situations. Finally, cluster 4 (18.8% of the sample) showed the highest prevalence of psychological maltreatment (0.92). Therefore, children and youngsters in this cluster were more at risk of this type of abuse.

Table 4 provides a complementary characterization of our typologies of risk. Thus, given that a child or youngster shows a specific risk indicator, it gives the likelihood of being in a specific cluster. These results support the priori results and interpretations. Namely, a child who was victim of neglecting behaviors from his/her own parents (physical neglect, lack of parental supervision, emotional neglect and educational neglect) showed higher probability of belonging to cluster 1; children who were victims of physical maltreatment and sexual abuse tended to belong to cluster 2; the least severe cases tended to be grouped in cluster 3. Cluster 4 showed higher concentration of emotional and psychological maltreatment as 25% and 29% of the children with these indicators belong there.

=== Table 4 about here ===

*Describing identified latent classes.* Table 5 profiles these latent classes using demographic characteristics of the sample.

=== Table 5 about here ===

Cluster 1 was labeled as “Neglecting Families”. In this cluster, the children were mostly boys (73%) with a mean age of 9.21 years. They had issues of failure to attend school regularly in nearly 40% of the cases; and while they had a family doctor (93%), only 38.2% regularly attended appointments. Most families in this cluster were single-parent households, while some extended, grandparent-led families and nuclear families also presented this profile. The mother was in the household in 83.6% of the cases, while the father was only present in 46.7% of cases. Mothers tended to be aged between 25 and 34 years old, and not have had a college education. Almost half of them (42.1%) were unemployed, against 25.7% of male caregivers. Only 27 out of 152 mothers held a full-time job. Furthermore, in this cluster, 17.1% of the female caregivers had an identified psychiatric disorder (some of which related to alcohol use (13.2%) or substance use (13.8%)), 28.3% had a history of aggressive behaviors, and 38.2% had a history of childhood abuse. Male caregivers also had history of aggressive behaviors in 29.6% of cases, alcohol use (28.3%) and substance dependence (17.1%). As far as the context, these families did not live in disadvantaged neighborhoods (91.4%); rather, they had a stable living situation (81.6%) in areas with good accessibility (77.6%) and other infrastructures (72.4%), such as playgrounds and schools. However, a few of the families (12.5%) were new to the area.

The second cluster was named “Abusive Families”. These were mostly nuclear families in terms of typology (50.9%), but also stepfamilies (27.4%). Their children were exposed to different and most severe forms of abuse or ill-treatment. The children are mostly girls (62.3%) aged 5 to 15 years (mean 10.2), who already seemed to display health and mental health problems. For instance, 21.1% of them had already been diagnosed with special

educational needs at school (such as learning disorders and developmental delays), over 38% isolated themselves from peers, and 32.5% revealed psychological problems according to the care workers. Mothers were mostly aged 35 to 44, and in this cluster the mothers had the highest percentage of history of childhood abuse themselves (over 50%), as well as alcohol use (43.9%) and aggressive behaviors (58.8%). These later variables were also common among the male caregivers (over 50%). In the neighborhood, the relationships with others were described as conflicted in 57% of cases; and these families were the ones most isolated in terms of social support.

Cluster 3 was composed of “Families with Children At-Risk”. Both girls and boys are equally represented in this cluster, mostly under five years of age (53%) or between five and eight years (34%), with a mean of four years. Mostly nuclear families (46.5%) comprise this group, even though single mothers and grandparent-led families were also present in this cluster. While they were the youngest in the sample, these children had been exposed to risk factors (such as adult aggressive behaviors, alcohol use, long term unemployment), and care workers already identified mild to moderate psychological problems among 32.5% of them. The neighborhoods in which these families lived were mostly poor in infrastructures (over 60%), such as schools, playgrounds, and accessibility. Furthermore, relationships with neighbors were described as unstable (68.5%) and/or aggressive (57%).

The fourth and last cluster was named “Families of Maltreated Adolescents”. This last group of families was comprised by those with young adolescents of both sexes (48.8% and 51.2% of females and males, respectively), aged 12 to 15 (26%) or over (38%) – mean age of 11.93 years old. Most of the families had a female and male caregiver in the household (nuclear or stepfamilies), but one-third was comprised of single mothers. Families revealed a number of strengths, despite the presence of psychological and emotional maltreatment. Their social integration indicators, employment and monthly household income showed up as

resources for these families. There was also a relatively low prevalence of problems related to aggressiveness or alcohol/substance abuse.

In sum, the identified clusters accounted for both the occurrence of multiple types of abuse as well as differing severities associated with each type. In particular, children in "Abusive Families" seemed to have a high probability of experiencing nearly all types of risk, including neglect and more severe conditions. On the other hand, children in "Families with Children at-Risk" seemed to be those with the least experience of risk of the first three. Finally, the emphasis of the fourth cluster was on the developmental period of the victims, namely, adolescent offspring of families who do not meet their emotional or psychological needs, but otherwise contextual resources were still available to them.

### **Discussion**

The present study aimed to determine if meaningful groups or clusters of abusive parenting in Portugal could be identified, from families referred to Child Protective Services nationwide. Using a latent class modeling, four distinct groups of families emerged based on the characterization of the children and adolescents, their parents/caregivers, and context variables. The results of this study confirmed our hypothesis of heterogeneous abusive parenting in Portugal. Clusters 1 and 2 were well defined according to the types of mistreatment; namely neglectful parenting behaviors and graver abusive parenting behaviors, respectively. Clusters 3 and 4 were clearly defined in terms of the variables that characterize not only mistreatment, but also the families and children/adolescents themselves. Cluster 3 was composed of families with younger children who are exposed to risk factors, while cluster 4 was comprised of families with older children and young people who are victims of emotional abuse.

According to our results, clusters 1 and 2 presented the most severe forms of abusive parenting, and the latter more so than the former. Among "Neglecting Families", two

particular domains of variables emerge, according to Belsky's approach (1984). On the one hand, adult caregiver's characteristics such as history of childhood abuse, psychiatric disorders, alcohol and substance abuse, aggressive behaviors speak to reduced personal psychological resources to support them in effective parenting practices. Lower educational level of mothers/female caregivers also was consistent with the literature on neglecting Portuguese families (Calheiros, 2006). On the other hand, contextual stress variables were identified as relevant for this group, in particular unemployment. This reality is particularly prominent in the present context of financial crisis which the country has been experiencing (macro-system) for the last few years.

Notably, the "Abuse Families" group (cluster 2) reflected the most salient consequences of child and adolescent maltreatment. Children/youth displayed already marked forms of suffering, such as the ones supported by the literature (e.g. Kitzmann, 2000; Petrenko et al, 2012). The highest levels of history of childhood abuse, alcohol/substance abuse and aggressive behaviors among caregivers were found in this group, reflecting a lack of psychological personal resources as a determinant of this parenting style (Belsky, 1984). Furthermore, as found by Calheiros and Monteiro (2007), aggressive behaviors in the household such as domestic discord/conflict or violence seemed to be relevantly associated with childhood abuse and neglect. These authors also showed that socio-economic disadvantage and the experience of stressful life events (such as sudden or prolonged unemployment) were strong predictors of maltreatment. These findings are in line with the ones by other researchers (Kitzmann, 2000; McGuigan & Pratt, 2001) who investigated the impacts of marital conflict and domestic violence on child maltreatment, and are of special concern in a macro-systemic condition which reveals increased (economical) strain and stress levels among families, and a cultural context which still experiences marked levels of gender violence (see reports by Commission for Citizenship and Gender Equality).

Latent class analysis identified four typologies of risk. This model-based clustering technique has a number of advantages over traditional cluster analysis. First, traditional or heuristic cluster analysis is a non-probabilistic method, where the number of clusters is identified by rules-of-thumb. Conversely, in LC models selection and estimation is performed under the maximum likelihood principle and sets proper rules to identify the best number of latent classes. Second, LC models operate on any type of scale of measurement of the data. Conversely, heuristic methods use indicators of similarity or distance between individuals. Thus, their application to non-metric data tends to be problematic as the Euclidean distance is not defined.

A few constraints of the study and its limitations are important to mention. Firstly, the data should be regarded with some caution given that the instrument used in this study was not standardized. The teams who completed the data were numerous, making it difficult to control if they all understood the concepts and issues the same way or in the way it was intended. Furthermore, while the literature on child/adolescent mistreatment is wide, there is still a lack of consensus regarding the definition of abuse and its typologies. Therefore there is a need for future research to attempt to develop clear definitions of types of mistreatment, as well as other essential indicators such as the severity, chronicity and co-occurrence of multiple forms of abuse and neglect of maltreatment.

The identification of four clusters was possible with the latent class model, as mentioned above. This model identified groups from the proposed variables that encompassed data from children, parents, and family context, considering a limited set of output variables. This reduction in the number of variables was necessary to run the model and make it parsimonious. However, in this process, some variables were excluded (e.g., those with high missing values). Hence, it is unknown whether the inclusion of some other variables would not significantly change the groups that were found, and further research is needed in order to



replicate these results. In parallel, it will be important to consider the possibility of developing qualitative studies that evaluate each of the four clusters in depth.

Still, we note that the present study allowed the identification of four distinct profiles of abusive parenting, which were clearly defined based on the types of risk and the characterization of the children and their families. The results of this study confirmed our hypothesis of heterogeneous abusive parenting in Portugal. Given this characterization, it is important to reflect on the specific needs of these four groups of families. These indicators may be important in drafting specific interventions depending on family needs, rather than utilizing a more universally-framed intervention. Meaningfully organizing abusive parenting may be an important step not only in understanding the origins of abuse and neglect, but also in integrating this information into intervention models with children, adolescents and their families. From this perspective of ecological models, it is suggested that a comprehensive and multi-dimensional perspective of parental mistreatment is undertaken.

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Table 1. Demographic characteristics of the sample of professionals from Child Protective Services

	Frequency	Percentage
<b>Age (years)</b>		
22–30	119	23.9
31–40	259	52.1
41–50	80	16.1
51–65	39	7.8
<b>Sex</b>		
Female	417	82.7
Male	87	17.3
<b>Professional Training</b>		
Education	111	22.0
Law	27	5.4
Psychology	113	22.4
Social Services	201	39.9
Other	52	10.3
Total	504	100.0

Table 2. Selection of variables in the model

	Wald statistics	p- value
<b>Indicators</b>		
Physical maltreatment	113.89	0.000
Psychological maltreatment	113.03	0.000
Physical neglect	87.58	0.000
Lack of parental supervision	136.64	0.000
Emotional neglect	64.45	0.000
Educational neglect	106.78	0.000
Sexual abuse	20.19	0.000
<b>Retained variables of characterization of cases</b>		
Age of child/adolescent	39.65	0.000
Sex of child/adolescent	32.50	0.000
Family structure	37.27	0.001
Age of mother/female caregiver	41.45	0.001
History of childhood abuse of mother/female caregiver	23.47	0.000
History of alcohol use of mother/female caregiver	31.52	0.000
History of substance use of mother/female caregiver	18.54	0.000
Unemployment of mother/female caregiver	18.50	0.000
Family isolation/Scarce social support	29.31	0.000
Low monthly income of the family household	40.87	0.006

Table 3. Estimated probability of each risk typology

<b>Indicators</b>	<b>Clusters</b>				<b>Aggregate solution</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	
Physical maltreatment	0.11	0.81	0.23	0.53	0.40
Psychological maltreatment	0.48	0.91	0.06	0.92	0.59
Physical neglect	0.70	0.95	0.47	0.06	0.60
Lack of parental supervision	0.86	0.80	0.13	0.25	0.58
Emotional neglect	0.98	0.93	0.50	0.75	0.83
Educational neglect	0.86	0.78	0.29	0.29	0.62
Sexual abuse	0.01	0.18	0.00	0.02	0.06



Table 4. Probability of belonging to a specific cluster given the indicator

<b>Indicators</b>	<b>Clusters</b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Physical maltreatment	0.10	0.54	0.12	0.25
Psychological maltreatment	0.28	0.40	0.02	0.29
Physical neglect	0.41	0.41	0.15	0.02
Lack of parental supervision	0.52	0.36	0.04	0.08
Emotional neglect	0.42	0.29	0.12	0.17
Educational neglect	0.49	0.33	0.09	0.09
Sexual abuse	0.08	0.83	0.00	0.08

Table 5. Profiling of the clusters

Indicators	Clusters				Aggregate
	1	2	3	4	
<i>Age of the child</i>					
Less than 5 y.o.	0.11	0.06	0.53	0.00	0.16
From 5 to 8 y.o	0.28	0.26	0.34	0.15	0.26
From 9 to 11 y.o	0.22	0.23	0.02	0.21	0.18
From 12 to 15 y.o.	0.31	0.24	0.08	0.26	0.24
More than 15 y.o	0.09	0.20	0.02	0.38	0.16
Mean	9.21	10.21	4.05	11.93	8.96
<i>Sex of the child</i>					
Male	0.73	0.37	0.51	0.46	0.54
Female	0.27	0.63	0.49	0.54	0.46
<i>Family Structure</i>					
Nuclear family	0.30	0.51	0.46	0.41	0.41
Stepfamily	0.11	0.21	0.00	0.26	0.14
Extended family (i.e., led by grandparents)	0.25	0.11	0.20	0.00	0.15
Female single-parent family	0.27	0.14	0.33	0.25	0.24
Male single-parent family	0.07	0.00	0.00	0.05	0.03
Other	0.00	0.04	0.01	0.04	0.02
<i>Age of the mother</i>					
Less than 18	0.00	0.00	0.02	0.02	0.01
18–24	0.00	0.13	0.26	0.08	0.10
25–34	0.47	0.25	0.41	0.31	0.37
35–44	0.29	0.43	0.27	0.36	0.33

45–54	0.22	0.09	0.00	0.18	0.14
55+	0.02	0.09	0.04	0.05	0.05
<hr/> <i>Health Information: History of childhood abuse of mother</i>					
No	0.62	0.47	0.58	0.65	0.58
Yes	0.38	0.53	0.42	0.35	0.42
<hr/> <i>Health Information: Alcohol use of mother</i>					
No	0.87	0.56	0.87	0.98	0.81
Yes	0.13	0.44	0.13	0.02	0.19
<hr/> <i>Health Information: Substance use of mother</i>					
No	0.86	0.98	0.78	0.98	0.90
Yes	0.14	0.02	0.22	0.02	0.10
<hr/> <i>Unemployment of the mother</i>					
No	0.58	0.64	0.52	0.75	0.62
Yes	0.42	0.36	0.48	0.25	0.38
<hr/> <i>Family Isolation / Lack of Social Support in Network</i>					
1	0.32	0.18	0.30	0.70	0.35
2	0.21	0.12	0.27	0.17	0.19
3	0.33	0.36	0.15	0.10	0.26
4+	0.14	0.33	0.28	0.02	0.20
Mean	1.39	1.91	1.50	0.45	1.37
<hr/> <i>Household Monthly Income</i>					
Less than 375€	0.43	0.31	0.45	0.13	0.35
374€–650€	0.52	0.56	0.45	0.38	0.49
More than 850€	0.06	0.13	0.09	0.49	0.16

## Appendix A. Selection of the number of latent classes

Number of latent classes	Log- likelihood (LL)	BIC	AIC	AIC3	CAIC	Npar	Classification	Entropy	Standard
							error (Class.Err.)	R- squared	R- squared
1	-1747.64	3537.78	3509.29	3516.29	3544.78	7	0.000	1.000	1.000
2	-1537.42	3317.67	3154.84	3194.84	3357.67	40	0.003	0.983	0.990
3	-1383.74	3210.65	2913.48	2986.48	3283.65	73	0.003	0.989	0.993
<b>4</b>	<b>-1260.83</b>	<b>3165.16</b>	<b>2733.66</b>	<b>2839.66</b>	<b>3271.16</b>	<b>106</b>	<b>0.005</b>	<b>0.986</b>	<b>0.989</b>
5	-1169.99	3183.81	2617.98	2756.98	3322.81	139	0.002	0.993	0.995
6	-1075.60	3195.38	2495.21	2667.21	3367.38	172	0.002	0.994	0.995