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Research paper

Harsh parenting trajectories from childhood through adolescence and socioemotional competences at age 18: 2004 Pelotas Birth Cohort Study

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ABSTRACT

Background: Limited research has explored the course of harsh parenting practices throughout childhood and adolescence and its impact on socioemotional competences from a longitudinal perspective. This study examined the association between harsh parenting trajectories and socioemotional competences at age 18.

Methods: Data from the 2004 Pelotas (Brazil) Birth Cohort study, originally comprising 4231 live births, were used. Harsh parenting was measured using the parent-report version of the Parent–Child Conflict Tactics Scale at ages 6, 11, 15 and 17 years, and trajectories were identified using a group-based modelling approach. Socioemotional competences were emotion regulation, assessed by the Emotional Regulation Index for Children and Adolescents; self-esteem, measured by the self-report Rosenberg Self-esteem Scale; prosocial behaviour and peer relationship problems, both assessed by the Strengths and Difficulties Questionnaire. Multivariate linear and Poisson regression models were applied to examine the effects of harsh parenting trajectories on socioemotional competences, adjusting for confounding variables.

Results: We identified three trajectories: a "low harsh parenting" trajectory (49.7 %), a "moderate harsh parenting" (44.7 %), and a "high harsh parenting" trajectory (5.6 %). Compared to those belonging to the low harsh parenting trajectory group, adolescents who experienced either a moderate or high harsh parenting trajectory exhibited lower scores in emotion regulation, self-esteem, and prosocial behaviour scales, along with higher scores of peer relationships problems.

Limitations: Data on harsh parenting at 15 and 17 years were available only for a sub-sample.

Conclusions: Our study extends the evidence of the adverse effects of persistent harsh parenting on socioemotional competences during adolescence.

1. Introduction

Violence against children is commonly assessed and characterized under terms such as "child maltreatment" or "harsh parenting" and affects about 50 % of children and adolescents aged 2 to 17 globally each year (Hillis et al., 2016). Harsh parenting is frequently defined as coercive actions, and negative emotional expressions, directed from parents to children. This encompasses both verbal aggression (such as shouting or reprimanding) and physical aggression (such as spanking) (Backhaus et al., 2023). These kinds of parental practices have been associated with adverse outcomes in children and adolescents, including mental and physical health impairments (Badr et al., 2018; Bauer et al., 2022; Chang et al., 2003; Hughes et al., 2017).

One adverse effect of maltreatment and harsh parenting concerns the development of children's psychological resources and socioemotional competences, which are molded by experiences throughout the lifespan (Kirschman et al., 2009). Socioemotional competences cover a range of skills to understand, manage, and express emotions, as well as the ability

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to engage in positive social interactions and build healthy relationships (Rose-Krasnor, 1997). Emotion regulation is a key aspect of socioemotional competence, encompassing intrinsic processes by which individuals influence the occurrence, timing, nature, experience, and expression of their emotions. This capacity enables individuals to monitor, evaluate, and modify their emotional responses (Buss et al., 2019), with growing evidence of the critical influence this has on healthy psychological development (Chervonsky and Hunt, 2019; McLaughlin et al., 2011). Self-esteem, another aspect of socioemotional competence, refers to an individual's subjective assessment of their personal worth (Leary and Baumeister, 2000), serving as a valuable predictor of success and well-being across various life domains, including relationships, work, and health (Orth and Robins, 2014).

Difficulties with emotion regulation and self-esteem have been linked to prior experiences of maltreatment. A meta-analytic review on the effects of early-life maltreatment on coping and emotional regulation during childhood and adolescence showed that maltreatment was associated with decreased emotion regulation, increased avoidance, emotional suppression, and the manifestation of negative emotions as responses to stress (Gruhn and Compas, 2020). Another recent meta-analytic review also showed that child maltreatment was negatively associated with self-esteem (Zhang et al., 2023). Furthermore, there are some evidence that child maltreatment negatively affects prosocial behaviour (Kong et al., 2023; Yu et al., 2020) and peer relationships (Kovács-Tóth et al., 2021; Yoon et al., 2021) during adolescence. The onset of puberty constitutes a biologically complex process affecting growth, behaviour and emotional development, making adolescence a particularly sensitive period to both adverse and favorable experiences (Rapee et al., 2019; Sisk and Gee, 2022).

The gathered evidence thus far has offered important contributions. However, most studies on child maltreatment or harsh parenting and socioemotional competences used data from high-income countries and were cross-sectional, carried out with small and non-representative samples (Gruhn and Compas, 2020; Kong et al., 2023; Yu et al., 2020; Zhang et al., 2023). Longitudinal research with large sample sizes, high retention rates and multiple assessments are scarce in low- and middle-income countries (LMICs), where exposure to violence is more frequent (Le et al., 2018). Besides increased exposure to violence, individuals in LMICs face higher levels of risk factors like poverty, income inequality, food insecurity, and limited healthcare access (Knerr et al., 2013; Herba et al., 2016). Additionally, cross-cultural differences in parenting exist (Lansford, 2022). For example, the associations between parenting styles and socioemotional competences may vary across ethnic groups and depend on a country's level of collectivism or individualism (Pinquart and Kauser, 2018; Pinquart, 2021). The extent and acceptability of harsh discipline, including physical punishment, also differ (Lansford and Deater-Deckard, 2012; Pinquart, 2021). Therefore, parenting practices likely have diverse effects on socioemotional competences in different cultural contexts. Data from the present study, which encompass ethnic and social diversity from a representative population, can provide new evidence for Latin American countries.

Hence, this study sought to assess the influence of harsh parenting trajectories during childhood and adolescence on socioemotional competences, including emotion regulation, self-esteem, prosocial behaviour, and peer relationship problems, at the age of 18, while accounting for potential confounding factors.

2. Methods

2.1. Study design and participants

The 2004 Pelotas Birth Cohort is a prospective, population-based study of all live babies born from 1 January to 31 December 2004 in the city of Pelotas, Brazil. The study included 4231 newborns (99.2 % of total births in the year). The primary goals of the investigation were to explore how early life exposures affect health outcomes and to examine disparities in health conditions related to social inequities. Trained interviewers applied standard questionnaires to the mothers during their hospital stay after delivery (perinatal study). Follow-ups occurred at ages 3, 12, 24, and 48 months, and at 6, 11, 15, 17, and 18 years, with varying response rates (86.6 % to 95.7 %). Due to COVID-19, the 15-year follow-up was partially completed (n = 1949, 48.5 % cohort), with subsequent assessment at 17 years (n = 1826, 93.8 % of those at 15 years). An 18-year follow-up in 2022 achieved an 85.0 % follow-up rate (Santos et al., 2011, 2014; Tovo-Rodrigues et al., 2024).

2.2. Main exposure: harsh parenting trajectories

Harsh parenting was the main explanatory variable, assessed using the Conflict Tactics Scale Parent-to-Child version (CTSPC) (Straus et al., 1998). Parents or caregivers, mostly biological mothers, completed the CTSPC which consists of 22 items distributed across three subscales, assessing parental behaviours toward the child over the past 12 months. These subscales focus on non-violent discipline (4 items), psychological aggression (5 items), and physical assault, encompassing corporal punishment (5 items), physical maltreatment (4 items), and severe physical maltreatment (4 items, not assessed in the cohort). Following the same definition used in a previous study within this cohort (Bauer et al., 2022), harsh parenting was represented by the cumulative scores of the 14-items derived from the subscales of psychological aggression, corporal punishment, and physical maltreatment (non-violent discipline was not included in the score). All items were rated on a 3-point scale (0–2), ranging from "never" to "once" and "more than once", yielding scores ranging from 0 to 28, with higher scores indicating more frequent occurrences of harsh parenting. The Portuguese version of the CTSPC has been cross-culturally adapted and validated in Brazil (Reichenheim and Moraes, 2003, 2006).

Harsh parenting trajectories were constructed using CTSPC scores assessed at the 6-, 11-, 15- and 17-year follow-ups through a semi-parametric group-based modelling approach (Nagin, 2005), which is a specialized form of finite mixture modelling. The models were estimated with the Stata procedure "traj" (Jones and Nagin, 2013). We included in the analyses 3458 adolescents with data on harsh parenting from at least two follow-ups. Individuals with missing information were not excluded from the model due to the ability of group-based trajectory modelling to handle missing data using maximum likelihood estimation (Nagin, 2005). The number and shape of trajectories were based on the best fit of the model (maximum Bayesian information criteria, BIC) and on the interpretability of the trajectories obtained (Nagin, 2005). Moreover, selection of the appropriate model was guided by the average posterior probability (APP) scores for each trajectory group (i.e., the individual's probability of belonging to each of the trajectory groups), which is recommended to be above the lower threshold for assignment of 0.7 (Nagin, 2005).

2.3. Main outcomes: socioemotional competences

The present study evaluated four different socioemotional competences of adolescents at age 18: emotion regulation, self-esteem, prosocial behaviour, and peer relationship problems.

Emotion regulation was assessed by the self-report version of the Emotional Regulation Index for Children and Adolescents (ERICA) (MacDermott et al., 2010), which is a 16-item scale rated on a 5-point Likert scale as follows: strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), and strongly agree (5), yielding overall scores ranging from 16 to 80. Higher scores reflect more adaptive emotion regulation. However, ten items were reverse-scored. The instrument is divided into three subscales: (i) Emotional control (7 items), evaluating a social inappropriate emotional response; (ii) Emotional self-awareness (5 items), regarding the recognition of self-emotions, and (iii) Situational responsiveness (4 items), related to social empathy (Table S1). The scale showed acceptable internal consistency, with a

Cronbach's alpha of 0.74.

Self-esteem was assessed using the self-report Rosenberg Self-esteem Scale (RSES) (Rosenberg, 1989), which had been validated and translated into Portuguese (Hutz and Zanon, 2011). This scale consisting of 10 items scored on a 4-point Likert scale (from 1, totally disagree, to 4, totally agree). The RSES encompasses six items referring to a positive self-evaluation and four items related to a self-deprecating view (Table S2). The self-deprecating items underwent reverse scoring, and a total score ranging from 10 to 40 was derived by summing all items. Higher scores indicate elevated levels of self-esteem. The scale demonstrated good internal consistency, with a Cronbach's alpha of 0.85.

Prosocial behaviour and peer relationship problems were ascertained by the mothers or caregivers using subscales of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). The prosocial behaviour subscale comprises a 5-item questionnaire with a score range from 0 to 10. On this scale, higher scores indicate higher competences (Table S3). Conversely, the peer relationship problems subscale is also a 5-item questionnaire with a score range from 0 to 10, where higher scores represent higher levels of difficulties (Table S4). The Cronbach's alphas were 0.65 and 0.48 for prosocial behaviour and peer relationship problems subscales, respectively.

2.4. Covariates

Sociodemographic characteristics included as covariates were: family income in the month prior to delivery (quintiles); maternal schooling (completed years of formal education, categorized as 0–4, 5–8, and ≥ 9 years); maternal age at childbirth (<19, 20–34, ≥35 years old); maternal self-reported skin colour (white or black/other); marital status (single mother or living with a partner). Perinatal characteristics were: parity (number of previous viable pregnancies resulting in a live birth or a late fetal death, categorized as 0, 1 or ≥ 2); maternal depressive symptoms during pregnancy (if the mother answered positively to the following question: "During pregnancy, did you feel depressed or have any nervous condition?"); smoking and alcohol use during pregnancy (self-reported and evaluated retrospectively at birth). Women informed about the initiation of their prenatal care (first, second, or third trimester) and whether the pregnancy was planned (yes/no). Type of delivery was categorized as vaginal or cesarean section.

Child's characteristics included sex assigned at birth (male/female); low birthweight (<2.500 g); gestational age (≤36, 37–41 or ≥ 42 weeks); 5 min Apgar score (<7 or ≥ 7); duration of breastfeeding reported by mothers at the 24-month follow-up (<1, 1–<3, 3–<6, 6–<12 or ≥ 12 months); number of siblings older or younger than the cohort participant assessed at the 4-year follow-up (0, ≥1).

Finally, parental characteristics included the father's presence during the child's first years, reported by mothers at the 24-month and 48-month follow-ups and categorized as "never absent," "absent sometimes," and "always absent." Additionally, maternal depressive symptoms at the 48-month follow-up were assessed using the translated and validated version of the Edinburgh Postnatal Depression Scale (EPDS) (Santos et al., 2007). A cutoff score of ≥10 was employed as an indicator of maternal depressive symptoms, with 82.6 % sensitivity and 65.4 % specificity (Santos et al., 2007).

2.5. Statistical analysis

Comparison of participants' characteristics included and not included in the study was analyzed using Pearson's chi-square test. Bivariate analyses were conducted to identify potential confounding variables. Using ANOVA, we analyzed the mean score and standard deviation (SD) of emotion regulation and self-esteem according to the covariates.

Multivariate linear regression analysis was conducted to evaluate the association between harsh parenting trajectories and changes in emotion regulation and self-esteem adjusting for confounding variables in separate models. Since the outcomes "prosocial behaviour" and "peer relationship problems" did not exhibit a normal distribution, a multivariate Poisson regression model with a robust variance was used to identify the association between harsh parenting trajectories and changes in prosocial behaviour and peer relationship problems, also controlling for confounding variables in separate models.

In both linear and Poisson regression analyses, potential confounding variables were included as covariates if they were significantly associated with harsh parenting trajectories and the outcome of interest and were not part of the causal chain (Rothman and Greenland, 1998). They were grouped and included in the adjusted analysis using a backward strategy selection. Five models were included for each outcome: unadjusted results (model 1), model 1 + sociodemographic characteristics (model 2), model 2 + perinatal characteristics (model 3), model 3 + child characteristics (model 4) and model 4 + parental characteristics (model 5). If the significance level was below 0.20, the variable remained in the model as a potential confounder for the next level. Interaction terms between harsh parenting trajectories and adolescent sex were tested but not introduced into the model, because they did not reach statistical significance ($p = 0.348$, $p = 0.606$, $p = 0.705$ and $p = 0.078$ for emotion regulation, self-esteem, prosocial behaviour and peer relationship problems, respectively). As a subsample of the cohort was assessed in the 15- and 17-years follow-ups, a sensitivity analysis was performed including only adolescents who had harsh parenting information in all follow-ups. All analyses were performed with Stata software version 16.1 (StataCorp LP, College Station, Tex).

2.6. Ethics

The 2004 Pelotas Birth Cohort Study was approved by the Research Ethics Committee of the Medical School of the Federal University of Pelotas. All principal caregivers and adolescents provided written informed consent before data collection. The study was also approved by the Ethics Committee for Analysis of Research Projects (CAPPesq) of the Hospital das Clínicas of the School of Medicine of the Universidade de São Paulo (USP) (Research protocol N° 4.951.457).

3. Results

3.1. Attrition and description analysis

Out of the initial 4231 participants in the cohort, interviews were conducted with 3489 individuals at 18 years. A total of 3458 adolescents had information on harsh parenting from at least two follow-ups and were included in the harsh parenting trajectory groups. Those who were included in the present study were less likely to be in the lowest quintile of family income, more likely to have mothers ≥35 years old at birth, and less likely to have a single mother, than those not included. Moreover, included adolescents were more likely to have mothers who started prenatal care in the first trimester of pregnancy, had a lower frequency of low birthweight, preterm birth and 5 min Apgar score < 7 than those non-included (Table S5).

Supplementary Table S6 presents the mean (SD) for harsh parenting scores in each follow-up, as well as socioemotional competences at age 18. Harsh parenting mean scores show a decline with increasing age. The means (SD) for emotion regulation, self-esteem, prosocial behaviour and peer relationship problems scores were 57.0 (7.2), 29.2 (4.7), 8.7 (1.8) and 3.6 (2.7), respectively.

3.2. Identification of trajectories

The first step involved modelling trajectories of harsh parenting scores from the time the children were 6 years to 17 years of age and analyses were conducted with specifications ranging from three to six group models. While BIC showed improvement with the addition of more groups, the enhancement observed when transitioning from the

three-group to the four-group model was minimal. Consequently, the three-group model emerged as the best-fitting and most parsimonious model. Two trajectories were best represented by a cubic term and one trajectory was quadratic (Fig. 1). Inspection of parameter estimates for the three-group model revealed that the constant term differed from zero for all three groups (Table S7). The group 1 (named "low harsh parenting", n = 1720) represents 49.7 % of adolescents. Group 2 (named "moderate harsh parenting", n = 1545) comprised 44.7 % of adolescents. Group 3 (named "high harsh parenting", n = 193) which represents 5.6 % of the sample, had high mean harsh parenting scores across all time points, indicating higher frequency of such parenting experiences. We found an APP of 0.88, 0.82, and 0.86, for Group 1 to Group 3, respectively (Table S7).

Regarding the sensitivity analyses, a total of 1508 individuals had harsh parenting information in all follow-ups. In this subsample, the same number of trajectories was identified and the results were similar to which were found considering those which participated in at least two follow-ups (Supplementary Tables S8 to S12 and Fig. S1).

3.3. Factors associated with harsh parenting trajectory membership

Table 1 compares participants in different harsh parenting trajectory groups by maternal and child characteristics. A higher proportion of adolescents in the "high harsh parenting" trajectory group were from the poorest families, born to mother with 5 to 8 years of schooling, as well as younger, non-white, single and primiparous mothers. In this group, there was a larger proportion of adolescents whose mothers reported depression, smoked and consumed alcohol during pregnancy, and started prenatal care in the third trimester, as well as a lower frequency of planned pregnancy and cesarean sections. Finally, a higher proportion of adolescents in the "high harsh parenting" group was male, had a 5 min Apgar score < 7, had fathers always absent, and had mothers with depressive symptoms at 48 months, than those in the other groups.

3.4. Factors associated with socioemotional competences at age 18

Table 2 presents adolescent's socioemotional competences according to maternal and child characteristics. Lower mean scores in emotion regulation, self-esteem and prosocial behaviour were found in adolescents from the poorest families and from mothers with the following characteristics: black or other skin colour; single at childbirth; reported depressive symptoms and smoked during pregnancy; had an unplanned gestation and reported depressive symptoms at 48 months. The mean scores of peer relationship problems were higher (indicating more problems) in adolescents from the first quintiles of family income, whose mothers were less educated, younger at childbirth, non-white, single at childbirth, multiparous, reported depressive symptoms and smoked during pregnancy, had an unplanned gestation and started prenatal care later. These scores were also higher for female adolescents, for those with at least one sibling, with an absent father between 24 and 48 months and whose mothers reported depressive symptoms at 48 months.

3.5. Socioemotional competences at age 18 as a function of harsh parenting trajectory membership

Adolescents in the "high harsh parenting" trajectory group had the lowest mean score of emotion regulation, self-esteem, and prosocial behaviour and the highest mean score of peer relationship problems than the other groups (Table 3).

After full adjustment in the linear regression analyses, the mean score of emotion regulation was 3.49 points lower (95%CI: −4.65; −2.32) among adolescents belonging to the "high harsh parenting" trajectory group compared to those in the "low" trajectory group (reference). Mean self-esteem score was 0.97 points lower (95%CI: −1.75; −0.19) among adolescents of the "high" trajectory compared to those from the "low" trajectory group (Table 4).

After controlling for potential confounders, Poisson regression analyses showed that the risk of adolescents presenting one point more in the prosocial behaviour score was 10 % lower in the "high harsh parenting" trajectory group, compared to the "low" trajectory group (RR: 0.90, 95%CI: 0.87; 0.95) and about 20 % higher of presenting peer relationship problems (RR: 1.23, 95%CI: 1.10; 1.38), compared to adolescents from the "low harsh parenting" group (Table 5).

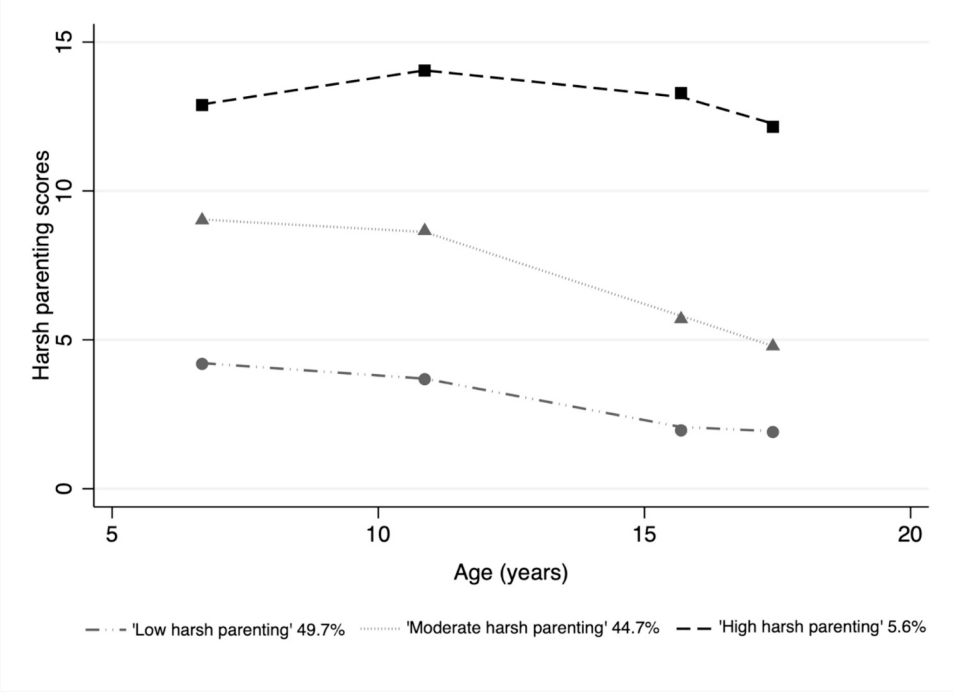

Fig. 1. Trajectories of harsh parenting (measured by the Conflict Tactics Scale Parent-to-Child version - CTSPC) by age, 2004 Pelotas Birth Cohort (n = 3458).

Table 1
Sociodemographic, perinatal, child and parental characteristics according to harsh parenting trajectory groups, 2004 Pelotas Birth Cohort, Brazil.

Variables	Harsh parenting trajectories			p-Value[a]
	Group 1 "Low harsh parenting" N = 1720 % (95 % CI)	Group 2 "Moderate harsh parenting" N = 1545 % (95 % CI)	Group 3 "High harsh parenting" N = 193 % (95 % CI)	
Sociodemographic characteristics				
Family income (quintiles)				<0.001
1 (lowest)	18.0 (16.3; 19.9)	20.3 (18.3; 22.3)	24.9 (19.2; 31.5)	
2	18.3 (16.5; 20.2)	21.8 (19.8; 23.9)	27.5 (21.6; 34.2)	
3	19.2 (17.4; 21.1)	20.6 (18.7; 22.7)	20.7 (15.6; 27.1)	
4	22.0 (20.1; 24.0)	20.8 (18.9; 22.9)	18.7 (13.7; 24.8)	
5 (highest)	22.5 (20.6; 24.6)	16.4 (14.7; 18.4)	8.3 (5.1; 13.1)	
Years of maternal schooling				<0.001
0–4	16.4 (14.7; 18.2)	13.7 (12.0; 15.5)	13.1 (9.0; 18.7)	
5–8	36.5 (34.2; 38.8)	45.1 (42.6; 47.6)	61.3 (54.1; 67.9)	
≥9	47.1 (44.8; 49.5)	41.2 (38.8; 43.7)	25.7 (19.9; 32.4)	
Maternal age at childbirth (years)				<0.001
<20	14.5 (12.9; 16.2)	22.1 (20.1; 24.2)	31.1 (24.9; 38.0)	
20–34	68.1 (65.9; 70.3)	66.9 (64.5; 69.2)	6.1 (54.0; 67.8)	
≥35	17.4 (15.7; 19.3)	11.0 (9.5; 12.7)	7.8 (4.7; 12.5)	
Maternal skin colour (white)	77.1 (75.0; 79.0)	70.5 (68.2; 72.7)	61.7 (54.6; 68.3)	<0.001
Single mother	12.9 (11.4; 14.5)	17.1 (15.3; 19.0)	29.0 (23.0; 35.9)	<0.001
Perinatal characteristics				
Parity				0.002
0	36.3 (34.0; 38.6)	42.1 (39.7; 44.6)	47.7 (40.7; 54.8)	
1	28.2 (26.1; 30.3)	25.4 (23.3; 27.7)	23.8 (18.3; 30.4)	
≥2	35.6 (33.3; 37.9)	32.4 (30.1; 34.8)	28.5 (22.5; 35.3)	
Depression symptoms during pregnancy (yes)	19.3 (17.5; 21.2)	28.5 (26.3; 30.8)	38.3 (31.7; 45.4)	<0.001
Smoking during pregnancy (yes)	21.3 (19.4; 23.3)	30.8 (28.6; 33.2)	46.6 (39.7; 53.7)	<0.001
Alcohol use during pregnancy (yes)	2.1 (1.5; 2.9)	4.5 (3.6; 5.7)	5.2 (2.8; 9.4)	<0.001
Planned pregnancy (yes)	46.0 (43.7; 48.4)	41.8 (39.4; 44.3)	37.5 (30.9; 44.6)	0.011
Started prenatal care visits				<0.001
1st trimester	77.2 (75.1; 79.1)	71.0 (68.7; 73.3)	62.7 (55.5; 69.4)	
2nd trimester	20.2 (18.3; 22.2)	26.7 (24.6; 29.0)	33.5 (27.0; 40.7)	
3rd trimester	2.6 (2.0; 3.5)	2.3 (1.6; 3.1)	3.8 (1.8; 7.8)	
Type of delivery (cesarean section)	47.6 (45.2; 50.0)	43.6 (41.2; 46.1)	39.4 (32.7; 46.5)	0.017
Child characteristics				
Sex (male)	48.9 (46.5; 51.3)	53.5 (51.0; 56.0)	63.7 (56.7; 70.2)	<0.001
Low birthweight (yes)	8.8 (7.5; 10.2)	8.9 (7.6; 10.5)	9.3 (5.9; 14.4)	0.964
Gestational age				0.136
≤36 weeks	12.5 (11.0; 14.1)	14.6 (13.0; 16.5)	17.1 (12.4; 23.1)	
37–41 weeks	81.5 (79.6; 83.3)	78.5 (76.4; 80.5)	77.8 (71.3; 83.1)	
≥42 weeks	6.0 (5.0; 7.2)	6.9 (5.7; 8.2)	5.2 (2.8; 9.4)	
5 min Apgar score (<7)	1.6 (1.1; 2.3)	1.4 (0.9; 2.1)	4.2 (2.1; 8.3)	0.013
Duration of breastfeeding				0.461
Never	2.9 (2.2; 3.8)	2.5 (1.8; 3.4)	2.1 (0.8; 5.5)	
<1 month	7.9 (6.7; 9.3)	7.0 (5.8; 8.3)	8.4 (5.2; 13.3)	
1–<3 months	15.3 (13.6; 17.0)	14.6 (12.9; 16.5)	15.7 (11.2; 21.6)	
3–<6 months	17.4 (15.7; 19.3)	19.2 (17.3; 21.3)	23.6 (18.0; 30.1)	
6–<12 months	18.2 (16.5; 20.1)	18.2 (16.3; 20.2)	12.6 (8.5; 18.1)	
≥12 months	38.2 (36.0; 40.6)	38.5 (36.1; 41.0)	37.7 (31.1; 44.8)	
Number of siblings (none)	35.3 (33.1; 37.7)	39.6 (37.2; 42.1)	38.2 (31.4; 45.4)	0.044
Parental characteristics				
Father's presence during child's life (24–48 months)				<0.001
Never absent	76.0 (73.8; 78.0)	69.2 (66.8; 71.6)	52.8 (45.4; 60.0)	
Absent sometimes	12.8 (11.2; 14.5)	15.9 (14.1; 17.9)	21.7 (16.2; 28.3)	
Always absent	11.2 (9.8; 12.9)	14.8 (13.1; 16.8)	25.6 (19.7; 32.5)	
Maternal depressive symptoms at 48-months follow-up (EPDS score ≥ 10)	23.0 (21.0; 25.1)	34.3 (31.9; 36.8)	44.9 (37.8; 52.1)	<0.001

Information on harsh parenting trajectories was available for n = 3458 individuals.
EPDS: Edinburg Postnatal Depression Scale.
[a] x^2 test.

4. Discussion

4.1. Main findings

Using data from a population-based birth cohort, we identified three trajectories of harsh parenting between ages 6 to 17 years, named "low", "moderate" and "high". The moderate harsh parenting trajectory and, more notably, the chronically elevated ("high harsh parenting") trajectory were associated with impaired socioemotional competences at age 18, including lower scores of emotion regulation, self-esteem and pro-social behaviour, and higher score of peer relationship problems, compared to the low harsh parenting trajectory group.

Table 2
Socioemotional competence scores at 18 years according to sociodemographic, perinatal, child and parental characteristics, 2004 Pelotas Birth Cohort, Brazil.

Variables	Emotion regulation		Self-esteem		Prosocial Behaviour		Peer relationship problems	
	Mean (SD)	p-Value[a]	Mean (SD)	p-Value[a]	Mean (SD)	p-Value[b]	Mean (SD)	p-Value[b]
Sociodemographic characteristics								
Family income (quintiles)		<0.001		<0.001		0.003		<0.001
1 (lowest)	55.2 (6.8)		28.4 (4.2)		8.5 (2.0)		4.0 (2.8)	
2	56.0 (7.1)		28.8 (4.4)		8.7 (1.8)		4.1 (2.8)	
3	57.2 (7.5)		29.1 (4.8)		8.7 (1.8)		3.7 (2.7)	
4	57.6 (6.9)		29.5 (4.8)		8.8 (1.7)		3.4 (2.7)	
5 (highest)	58.9 (7.1)		30.1 (5.2)		8.9 (1.6)		2.8 (2.5)	
Years of maternal schooling		<0.001		<0.001		0.155		<0.001
0–4	55.5 (7.0)		28.3 (4.3)		8.7 (2.0)		4.4 (2.8)	
5–8	56.3 (7.0)		28.9 (4.4)		8.7 (1.8)		3.9 (2.8)	
≥9	58.0 (7.3)		29.7 (5.1)		8.8 (1.7)		3.1 (2.6)	
Maternal age at childbirth (years)		0.001		0.496		0.026		0.043
<20	56.4 (6.8)		29.0 (4.4)		8.6 (1.9)		3.8 (2.7)	
20–34	56.9 (7.3)		29.2 (4.8)		8.8 (1.7)		3.6 (2.8)	
≥35	58.0 (7.2)		29.4 (4.8)		8.9 (1.7)		3.4 (2.7)	
Maternal skin colour		<0.001		0.002		0.074		<0.001
White	57.3 (7.2)		29.3 (4.8)		8.8 (1.7)		3.5 (2.7)	
Black or other	56.1 (7.1)		28.8 (4.5)		8.6 (1.9)		3.9 (2.8)	
Living with a partner		<0.001		0.043		<0.001		0.001
No	55.7 (6.9)		28.8 (4.6)		8.4 (2.0)		4.0 (2.8)	
Yes	57.2 (7.2)		29.3 (4.7)		8.8 (1.7)		3.5 (2.7)	
Perinatal characteristics								
Parity		<0.001		0.009		0.040		<0.001
0	57.6 (7.2)		29.4 (4.8)		8.6 (1.8)		3.4 (2.6)	
1	56.9 (7.2)		29.2 (4.8)		8.8 (1.7)		3.3 (2.7)	
≥2	56.3 (7.1)		28.9 (4.6)		8.8 (1.8)		4.0 (2.9)	
Depression symptoms during pregnancy		<0.001		<0.001		0.001		<0.001
No	57.4 (7.3)		29.4 (4.8)		8.8 (1.7)		3.5 (2.7)	
Yes	55.7 (6.8)		28.4 (4.4)		8.6 (1.9)		4.0 (2.8)	
Smoking during pregnancy		<0.001		<0.001		<0.001		<0.001
No	57.6 (7.2)		29.4 (4.8)		8.8 (1.7)		3.4 (2.7)	
Yes	55.5 (7.0)		28.5 (4.5)		8.5 (1.9)		4.2 (2.8)	
Alcohol use during pregnancy		0.027		0.186		0.053		0.086
No	57.0 (7.2)		29.2 (4.7)		8.8 (1.8)		3.6 (2.8)	
Yes	55.5 (7.7)		28.6 (4.5)		8.4 (2.0)		4.0 (2.7)	
Planned pregnancy		<0.001		0.006		<0.001		0.002
No	56.6 (7.3)		29.0 (4.7)		8.6 (1.9)		3.7 (2.8)	
Yes	57.5 (7.1)		29.4 (4.7)		8.9 (1.6)		3.4 (2.7)	
Started prenatal care visits		<0.001		<0.001		0.387		<0.001
1st trimester	57.4 (7.3)		29.4 (4.8)		8.8 (1.7)		3.4 (2.7)	
2nd trimester	56.0 (6.9)		28.7 (4.4)		8.7 (1.8)		4.0 (2.8)	
3rd trimester	54.8 (7.0)		28.4 (4.2)		8.5 (1.7)		4.1 (2.8)	
Type of delivery		0.013		0.048		0.417		0.116
Vaginal	56.7 (7.3)		29.0 (4.6)		8.7 (1.8)		3.7 (2.8)	
Cesarean section	57.3 (7.1)		29.4 (4.8)		8.8 (1.7)		3.5 (2.7)	
Child characteristics								
Sex		<0.001		<0.001		0.175		<0.001
Male	58.2 (7.0)		30.0 (4.6)		8.7 (1.8)		3.3 (2.6)	
Female	55.7 (7.2)		28.4 (4.7)		8.8 (1.7)		3.9 (2.8)	
Low birthweight		0.024		0.688		0.946		0.314
No	57.1 (7.2)		29.2 (4.7)		8.7 (1.8)		3.6 (2.8)	
Yes	56.1 (7.5)		29.1 (4.7)		8.7 (1.8)		3.8 (2.7)	
Gestational age		0.098		0.283		0.214		0.007
≤36 weeks	56.4 (7.0)		28.9 (4.6)		8.7 (1.9)		3.9 (2.8)	
37–41 weeks	57.1 (7.2)		29.2 (4.7)		8.8 (1.7)		3.5 (2.7)	
≥42 weeks	56.7 (7.3)		29.5 (4.8)		8.5 (1.9)		3.9 (2.9)	
5 min Apgar score		0.726		0.135		0.876		0.504
<7	57.4 (8.7)		30.1 (4.8)		8.7 (1.5)		3.8 (2.8)	
≥7	57.0 (7.2)		29.2 (4.7)		8.7 (1.8)		3.6 (2.8)	
Duration of breastfeeding		0.024		0.814		0.495		0.361
Never	55.6 (6.9)		29.1 (4.3)		8.8 (1.7)		3.9 (2.9)	
<1 month	56.4 (7.4)		29.3 (4.6)		8.5 (2.1)		3.6 (2.7)	
1–<3 months	56.4 (7.3)		28.9 (4.7)		8.8 (1.8)		3.7 (2.8)	
3–<6 months	57.1 (7.2)		29.2 (4.9)		8.7 (1.7)		3.7 (2.8)	
6–<12 months	57.6 (7.1)		29.3 (4.8)		8.8 (1.6)		3.4 (2.7)	
≥12 months	57.1 (7.2)		29.2 (4.7)		8.7 (1.8)		3.6 (2.7)	
Siblings (number)		0.051		0.108		0.025		0.045
0	57.3 (7.1)		29.4 (4.8)		8.7 (1.8)		3.5 (2.7)	

(*continued on next page*)

Table 2 (*continued*)

Variables	Emotion regulation		Self-esteem		Prosocial Behaviour		Peer relationship problems	
	Mean (SD)	p-Value[a]	Mean (SD)	p-Value[a]	Mean (SD)	p-Value[b]	Mean (SD)	p-Value[b]
≥1	56.8 (7.3)		29.1 (4.7)		8.8 (1.7)		3.7 (2.8)	
Parental characteristics								
Father's presence during child's life (24–48 months)		<0.001		<0.001		<0.001		0.002
Never absent	57.4 (7.2)		29.4 (4.8)		8.8 (1.7)		3.5 (2.7)	
Absent sometimes	55.9 (7.0)		28.8 (4.5)		8.6 (1.8)		3.9 (2.7)	
Always absent	55.8 (7.1)		28.5 (4.8)		8.4 (2.0)		3.9 (2.8)	
Maternal depressive symptoms at 48-months follow-up (EPDS score ≥ 10)		<0.001		<0.001		<0.001		<0.001
No	57.5 (7.2)		29.5 (4.8)		8.8 (1.7)		3.3 (2.6)	
Yes	55.6 (7.1)		28.5 (4.5)		8.5 (2.0)		4.3 (2.8)	

Information on emotion regulation and self-esteem were available for n = 3443, prosocial behaviour and peer relationship problems for n = 3187.
EPDS: Edinburg Postnatal Depression Scale.
[a] ANOVA.
[b] Poisson regression with a robust variance.

Table 3
Description of the socioemotional competence scores at 18 years according to harsh parenting trajectory groups, 2004 Pelotas Birth Cohort, Brazil.

Socioemotional competences	Harsh parenting trajectory groups			p-Value
	Group 1 "Low harsh parenting"	Group 2 "Moderate harsh parenting"	Group 3 "High harsh parenting"	
Emotion regulation (mean, SD)	57.9 (7.2)	56.6 (7.1)	53.8 (7.1)	<0.001[a]
Self-esteem (mean, SD)	29.5 (4.8)	29.1 (4.6)	28.2 (4.7)	<0.001[a]
Prosocial behaviour (mean, SD)	9.0 (1.5)	8.5 (1.9)	8.0 (2.2)	<0.001[b]
Peer relationship problems (mean, SD)	3.3 (2.6)	3.7 (2.7)	4.5 (2.9)	<0.001[b]

Information on the association between harsh parenting trajectories and outcomes was available for: emotion regulation and self-esteem (n = 3113); prosocial behaviour and peer relationship problems (n = 2919).
[a] ANOVA.
[b] Poisson regression with a robust variance.

4.2. Interpretation and literature comparisons

To our knowledge, this is the first study examining harsh parenting trajectories from childhood through adolescence. We identified a small, although important, group that experienced persistently high harsh parenting from mid-childhood through adolescence. Comparing the socioeconomic profiles across different trajectory groups, we found that the proportion of individuals born to mothers with >9 years of schooling was lower in the high harsh parenting group compared to the others. Additionally, the "high harsh parenting" trajectory group had higher proportions of individuals from poorer families compared to the "low" group. This aligns with previous literature, which has long recognized family poverty as a significant risk factor for child maltreatment (Austin et al., 2020).

Considering health factors, our "high" trajectory group had a higher proportion of participants born to mothers who experienced maternal depression, used alcohol, and smoked during pregnancy, as well as mothers who had depressive symptoms when the children were 48 months old. Multiple studies have found associations between parental mental health problems and substance use disorders with the occurrence of child maltreatment (Ayers et al., 2019; Kepple, 2017). Lastly, it is noteworthy that harsh parenting scores decreased with the child's advancing age in our study. Evidence suggests that the risk for child maltreatment (excluding sexual abuse) and harsh parenting increases in the early years of a child's life (infancy and toddlerhood), but then decreases as the child's dependence on and time spent with caregivers reduces (Austin et al., 2020; Berthelon et al., 2020).

Our findings support previous studies that observed adverse socioemotional outcomes among adolescents exposed to maltreatment or harsh parenting (Badr et al., 2018; Gruhn and Compas, 2020). The extended period during which emotion regulation develops, spanning childhood and adolescence, may make it particularly vulnerable to the adverse effects of harsh parenting throughout these stages (Morris et al., 2017). Consequently, impaired emotion regulation is considered a potential mechanism that has been studied in the connection between maltreatment and psychopathology (Morris et al., 2017). To the best of our knowledge, our study is the first to evaluate the impacts of harsh parenting trajectories on emotional regulation of adolescents. A previous longitudinal study with a low-income sample from the United States (including 171 maltreated and 151 nonmaltreated children) found that early maltreatment was associated with high emotion lability-negativity at age 7, contributing to poor emotion regulation at age 8, which was predictive of increases in internalizing symptomatology from ages 8 to 9 (Kim-Spoon et al., 2013).

Concerning self-esteem, previous studies (Zhang et al., 2023) corroborate our finding of a negative association with a history of chronic high levels of harsh parenting. However, in numerous prior studies, self-esteem has been assessed as a mediator in the relationship between child maltreatment/harsh parenting and adverse mental health outcomes. Arslan (2016) investigating 937 adolescents in Turkey found that psychological maltreatment was negatively correlated with resilience and self-esteem, and positively correlated with behavioral and emotional problems. Moreover, resilience and self-esteem partially mediated the relationship between psychological maltreatment-behavioral and psychological maltreatment-emotional problems in those adolescents (Arslan, 2016). Recently, Zhao and Wang (2023) found that harsh parenting indirectly contributes to adolescent suicide ideation via the mediator of adolescents' self-esteem. However, it is important to highlight that cross-sectional studies from a meta-analysis including children and adolescents found small to moderate positive associations of authoritative parenting with higher levels of self-esteem, while the reverse was found for authoritarian and neglectful parenting (Pinquart and Gerke, 2019). The authors of this meta-analysis emphasized the necessity for more longitudinal studies in this field (Pinquart and Gerke, 2019).

In our study, adolescents from high and moderate harsh parenting

Table 4
Crude and adjusted analysis for emotion regulation and self-esteem according to the trajectories of harsh parenting ("low harsh parenting" group as reference), 2004 Pelotas Birth Cohort, Brazil.

Socioemotional competences	Models	Harsh parenting trajectory groups			p-Value
		Group 1 "Low harsh parenting" β (95 % CI)	Group 2 "Moderate harsh parenting" β (95 % CI)	Group 3 "High harsh parenting" β (95 % CI)	
Emotion regulation	Model 1 (n = 3113)	1.0	−1.31 (−1.82; −0.79)	−4.07 (−5.19; −2.94)	<0.001
	Model 2[a] (n = 3081)	1.0	−1.06 (−1.58; −0.54)	−3.38 (−4.51; −2.24)	<0.001
	Model 3[b] (n = 3079)	1.0	−0.91 (−1.43; −0.39)	−3.12 (−4.26; −1.98)	<0.001
	Model 4[c] (n = 3079)	1.0	−1.02 (−1.54; −0.51)	−3.51 (−4.63; −2.39)	<0.001
	Model 5[d] (n = 2907)	1.0	−0.96 (−1.49; −0.43)	−3.49 (−4.65; −2.32)	<0.001
Self-esteem	Model 1 (n = 3113)	1.0	−0.42 (−0.77; −0.08)	−1.31 (−2.05; −0.56)	0.001
	Model 2[e] (n = 3082)	1.0	−0.34 (−0.68; 0.01)	−1.00 (−1.75; −0.25)	0.014
	Model 3[f] (n = 3080)	1.0	−0.24 (−0.59; 0.11)	−0.81 (−1.57; −0.06)	0.073
	Model 4[g] (n = 3080)	1.0	−0.31 (−0.66; 0.03)	−1.06 (−1.80; −0.31)	0.011
	Model 5[h] (n = 2908)	1.0	−0.29 (−0.64; 0.07)	−0.97 (−1.75; −0.19)	0.031

Model 1 = crude analysis.
Model 2 = Model 1 + sociodemographic characteristics.
Model 3 = Model 2 + perinatal characteristics.
Model 4 = Model 3 + child characteristics.
Model 5 = Model 4 + parental characteristics.
[a] Family income, maternal schooling, maternal age, maternal skin colour, marital status.
[b] Parity, maternal smoking during pregnancy, maternal depression during pregnancy.
[c] Child's sex.
[d] Maternal depressive symptoms at 48-months follow-up, father's presence in child's life during 24 to 48 months age.
[e] Family income, maternal schooling, maternal skin colour.
[f] Maternal smoking during pregnancy, maternal depression during pregnancy.
[g] Child's sex.
[h] Maternal depressive symptoms at 48-months follow-up, father's presence in child's life during 24 to 48 months age.

Table 5
Crude and adjusted analysis for prosocial behaviour and peer relationship problems according to the trajectories of harsh parenting ("low harsh parenting" group as reference), 2004 Pelotas Birth Cohort, Brazil.

Socioemotional competences	Models	Harsh parenting trajectory groups			p-Value
		Group 1 "Low harsh parenting" RR (95 % CI)	Group 2 "Moderate harsh parenting" RR (95 % CI)	Group 3 "High harsh parenting" RR (95 % CI)	
Prosocial behaviour	Model 1 (n = 2919)	1.0	0.95 (0.93; 0.96)	0.88 (0.85; 0.92)	<0.001
	Model 2[a] (n = 2919)	1.0	0.95 (0.93; 0.96)	0.89 (0.85; 0.93)	<0.001
	Model 3[b] (n = 2918)	1.0	0.95 (0.94; 0.96)	0.90 (0.86; 0.94)	<0.001
	Model 4[c] (n = 2842)	1.0	0.95 (0.94; 0.96)	0.90 (0.86; 0.94)	<0.001
	Model 5[d] (n = 2822)	1.0	0.95 (0.94; 0.97)	0.90 (0.87; 0.95)	<0.001
Peer relationship problems	Model 1 (n = 2919)	1.0	1.14 (1.07; 1.20)	1.38 (1.24; 1.54)	<0.001
	Model 2[e] (n = 2889)	1.0	1.12 (1.06; 1.18)	1.28 (1.15; 1.42)	<0.001
	Model 3[f] (n = 2887)	1.0	1.10 (1.04; 1.17)	1.25 (1.12; 1.39)	0.001
	Model 4[g] (n = 2883)	1.0	1.11 (1.05; 1.17)	1.27 (1.14; 1.42)	<0.001
	Model 5[h] (n = 2791)	1.0	1.09 (1.02; 1.15)	1.23 (1.10; 1.38)	<0.001

RR: rate ratio.
Model 1 = crude analysis.
Model 2 = Model 1 + sociodemographic characteristics.
Model 3 = Model 2 + perinatal characteristics.
Model 4 = Model 3 + child characteristics.
Model 5 = Model 4 + parental characteristics.
[a] Family income, marital status.
[b] Maternal smoking during pregnancy, planned pregnancy.
[c] Siblings (number).
[d] Maternal depressive symptoms at 48-months follow-up.
[e] Family income, maternal schooling, marital status.
[f] Parity, maternal depression during pregnancy, smoking during pregnancy.
[g] Child's sex, gestational age.
[h] Maternal depressive symptoms at 48-months follow-up.

trajectory groups had lower scores of prosocial behaviour and higher scores of peer relationship problems. Prosocial behaviour and peer relationships are intertwined and related to child maltreatment in a complex way. Children or adolescents who face maltreatment may have challenges developing prosocial behaviour and peer relationships, which involves altruistic and cooperative actions for the benefit of others (Burt, 2022; Yoon et al., 2021). Data from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN), a consortium of studies of child maltreatment in the United States, revealed that the degree of peer engagement in prosocial activities may not be a risk or protective pathway to externalizing behaviours in adolescence for those exposed to child maltreatment (Allen et al., 2021). On the other hand, there is evidence that peer acceptance may mitigate the indirect impact of harsh parenting on adolescent depression by buffering the effect of negative self-cognition on adolescent depression (Tang et al., 2018).

4.3. Potential mechanisms

The negative impact of harsh parenting on offspring's socioemotional competences may be explained by several possible psychological and biological mechanisms. It is important to highlight that the severity, type, chronicity, and timing of these experiences, as well as the child's individual characteristics and environmental context, can influence the extent of its impact on child development (McLaughlin et al., 2019). As observed in our study, the association between harsh parenting trajectories and outcomes increased when moving from moderate to high harsh parenting trajectories, highlighting a dose-response relationship. This indicates that the frequency of harsh parenting proportionally raises the risk and severity of adverse health outcomes in adolescents. While there are studies on cumulative risks of adverse childhood experiences (Appleyard et al., 2005; Hughes et al., 2017; Kovács-Tóth et al., 2021), we found no similar studies on harsh parenting exposure with extended follow-up periods that could be used to compare with our observed dose-response relationship.

Regarding psychological mechanisms, harsh parenting can disrupt the formation of secure attachment bonds between the child and caregiver and children's exposure to parental aggressions at home is associated with more behavioral problems (Berthelon et al., 2020; Cooke et al., 2019). Children exposed to harsh parenting, including physical or verbal aggression, may develop negative cognitive schemas about themselves (Cole et al., 2016; Gibb and Abela, 2008). They may perceive themselves as unworthy, leading to low self-esteem (Zhang et al., 2023; Donovan and Brassard, 2011).

Considering the biological mechanism, the brain undergoes a period of rapid growth and development during childhood and adolescence, and exposure to harsh parenting/maltreatment during these critical periods can have profound and negative consequences (Cortes Hidalgo et al., 2022; Paquola et al., 2016). Dysregulation of the hypothalamic-pituitary-adrenocortical (HPA) axis stands out as one of the key mechanisms implicated in the pathways from childhood maltreatment to later psychopathology, and the amygdala and hippocampus are brain regions of interest in the context of adverse caregiving (Wesarg et al., 2020; Whittle et al., 2013). The hippocampus, which plays a crucial role in memory and learning, and the prefrontal cortex, responsible for decision-making and emotional regulation, may be adversely affected by chronic stress resulting from maltreatment (McLaughlin et al., 2019). Exposure to high levels of stress hormones can impact brain development and functioning, particularly in regions associated with emotion regulation and stress response (Callaghan and Tottenham, 2016). Moreover, maltreatment can negatively influence the formation of synapses and neural pathways, leading to altered connectivity between brain regions. This can affect cognitive processes, emotional regulation, and social functioning (McLaughlin et al., 2019; Herzberg and Gunnar, 2020).

A recent study explored the links between childhood maltreatment, adolescent brain development, and mental health trajectories into young-adulthood in 144 youth assessed at ages 12, 16, and 18 (Rakesh et al., 2023). Maltreatment was reported to occur prior to the first scan and structural magnetic resonance imaging data was acquired. The authors concluded that maltreatment was associated with altered coupling between subcortical and prefrontal regions during adolescence, suggesting its impact on the development of socio-emotional neural circuitry (Rakesh et al., 2023).

4.4. Strengths and limitations

Our study filled an important gap in the literature by identifying trajectories of harsh parenting in Brazil, a middle-income country, with higher levels of socioeconomic inequality and violence, compared to many high-income countries where most prior research has been carried-out. In addition, we used a large population-based sample with high response rate, longitudinal and repeated assessments. In this study we employed well-validated instruments to assess both harsh parenting and socioemotional competences. Another strength was the adjustment for multiple characteristics that potentially act as confounding variables in the associations being investigated.

Concerning the limitations, first, in the 15- and 17-year follow-ups, data on harsh parenting was available for a sub-sample of the cohort, which could have introduced attrition bias into our study. However, we used data from adolescents who had participated in at least two follow-ups and conducted a sensitivity analysis including individuals with complete data at all points. In these analyses, no differences were found regarding the number or shape of the trajectories, and the associations showed similar results, reinforcing the idea that the bias due to losses at the 15- and 17-year follow-ups is likely limited. Nevertheless, it is important to note that, as we had differential attrition related to socioeconomic status (participants in this study were less likely to belong to the lowest family income quintile), the estimated frequencies of high harsh parenting trajectory group, as well as of worse outcomes at 18 years, were likely underestimated due to non-random losses associated with unfavorable socioeconomic status. Thus, it is also possible that this differential attrition has led to an underestimation of the relationship between harsh parenting and socioemotional competences, even if marginally (Saiepour et al., 2019; Gustavson et al., 2012). Secondly, "harsh parenting" data collection began when participants were 6 years old, leaving a gap for early childhood, a critical period for socioemotional development (Berthelon et al., 2020; Speyer et al., 2022). Thirdly, the peer relationship problems scale showed low internal consistency (Cronbach's alpha = 0.48), whereas the internal consistency for the other outcomes ranged from acceptable to good. Fourth, both harsh parenting and some outcomes (prosocial behaviour and peer relationship problems) were reported solely by parents (mainly mothers), without input from other informants, like teachers, fathers, or the children/adolescents themselves. Parents may under-report harsh parenting and their children's problems, potentially weakening the associations. Fifth, inferring causality between harsh parenting trajectories and socioemotional competences is challenging. Previous studies showed that socioemotional competences are influenced by multiple factors, including biological, environmental and social influences, making it particularly difficult to identify the causal process involved (Wiggins and Monk, 2013). Additionally, we could not account for genetic factors or genotype-environment interactions, which could play a significant role in the development of socioemotional competences (Burt, 2022; Warrier et al., 2021). Lastly, while we adjusted for various confounders, the presence of unmeasured or residual confounders cannot be completely ruled out.

5. Conclusions

The present study provided evidence of different trajectories of harsh parenting during childhood and adolescence and their impact on socioemotional competences at age 18. We identified a small but important group of children experiencing chronic high harsh parenting and, for this group, socioemotional competences were particularly compromised. Our study also showed that adolescents from not only high harsh parenting but also on moderate harsh parenting trajectories presented more socioemotional difficulties than those on a low harsh parenting trajectory. These findings emphasize some crucial implications for further research, highlighting the need to explore potential protective factors, such as behavioral resilience (Gartland et al., 2019), that may mitigate the harmful effects of harsh parenting on offspring's socioemotional competences. Interventions should be conducted to assess whether improving parents' discipline strategies leads to a reduction on socioemotional difficulties. Additionally, interventions aimed at fostering the development of socioemotional competences in children and adolescents may prove to be an effective approach in preventing mental health problems in the future. Given the potential long-term impacts of harsh parenting on offspring's socioemotional

competences, early identification, appropriate intervention, and follow-up must be a key priority.

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CRediT authorship contribution statement

Mariana Otero Xavier: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Luciana Tovo-Rodrigues:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Iná S. Santos:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Joseph Murray:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Jessica Mayumi Maruyama:** Writing – review & editing, Methodology, Investigation, Conceptualization. **Alicia Matijasevich:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jad.2024.08.112.

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