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Associations of Parent-Reported Family Functioning, Screen Time, and Adiposity with Child-Perceived Family Functioning: A Cross-Sectional Study

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Highlights

What are the main findings?

- Higher parent-reported family functioning was independently associated with better child-perceived family functioning, whereas higher child BMI-for-age z-scores were associated with lower child Family APGAR scores.
- Neither parent nor child screen time was independently associated with child-perceived family functioning after adjustment for relevant covariates.

What is the implication of the main finding?

- Assessments of family functioning in school-aged children may benefit from incorporating both parent and child perspectives alongside anthropometric characteristics.
- The findings suggest that screen time duration alone may not adequately reflect family relational functioning, highlighting the need for future longitudinal studies examining the quality and context of screen use.

Abstract

Background/Objectives: Family functioning is a multidimensional relational context that has been associated with child health outcomes. This study aimed to evaluate the associations of parent-reported family functioning, child adiposity (BMI-for-age z-score; BAZ), and parental and child screen time with child-perceived family functioning. **Methods:** This cross-sectional study enrolled 212 consecutive parent–child dyads (children aged 8–10 years) at the pediatric outpatient clinic of Bursa City Hospital (July–December 2024); 197 dyads with plausible anthropometric data were analyzed. Parents and children independently completed the Family APGAR. Height and weight were parent-reported, and BAZ was calculated using the WHO 2007 reference. Screen time was assessed with a single self-reported item on average daily hours. Multivariable linear regression with robust standard errors, adjusted for child age and sex and parental age, sex, and BMI, was used. **Results:** Twenty-three children (11.7%) had suboptimal Family APGAR scores. Parent Family APGAR score was positively associated with child Family APGAR score (B = 0.18; 95% CI 0.07–0.30; $p = 0.001$), and child BAZ was inversely associated with it (B = −0.21; 95% CI −0.37 to −0.06; $p = 0.006$). No statistically detectable association was observed for parental (B = −0.02; 95% CI −0.10 to 0.06) or child screen time (B = −0.07; 95% CI −0.21 to 0.07). The model explained 13.9% of the variance. Internal consistency of the child-reported Family APGAR was limited (ordinal α = 0.67). **Conclusions:** In this cross-sectional sample, child-perceived family functioning was associated with parent-reported family functioning

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and child BAZ, whereas no association was detected with screen time measured as a single duration item. The direction of these associations cannot be determined.

Keywords: family APGAR; family functioning; body mass index; adiposity; screen time; child health; cross-sectional studies

1. Introduction

Family functioning is a multidimensional relational context encompassing communication, mutual support, shared problem-solving, and adaptation to the changing needs of family members. In childhood and adolescence, family functioning has been associated with mental health outcomes such as depressive symptoms [1]. Assessing family functioning from both parental and child perspectives reveals different viewpoints of the same family environment.

Similar to its relationship with mental health, the association of family functioning with children's physical health has also been investigated. The association between childhood adiposity and family functioning may be bidirectional. Evidence suggests that poor family functioning may be associated with overweight and obesity in children, with processes such as communication, conflict management, and family organization potentially playing an important role [2,3]. The current family-based obesity literature also addresses family processes alongside behavioral and anthropometric outcomes [3,4]. However, studies evaluating family functioning and child weight status in the same sample using both parent and child reports remain limited.

One of the contextual factors that may be related to intra-family processes is digital media use. Screen time has been associated with growth and development and may be linked to intra-family relational processes; moreover, parental screen habits have been reported to be associated with children's screen use behaviors [5–8]. Parental technology use in the presence of children has been associated with poorer parent–child interaction and relationship quality [9–11]. In Southern European samples of school-aged children, longer screen exposure has also been associated with lifestyle factors such as lower adherence to the Mediterranean diet [12,13].

The relationship between screen use and adiposity is also heterogeneous. Some studies report that higher screen time is associated with overweight/obesity or higher anthropometric indices, while in others the magnitude of the association varies by adiposity measure [14,15]. This heterogeneity suggests that total screen time alone may not adequately represent the quality of family relationships or the behavioral mechanisms related to child weight status.

Because these variables are interrelated, they were examined jointly in a single multivariable model. In a cross-sectional design, the temporal order of family functioning, adiposity, and screen use cannot be established, and reverse or reciprocal associations are equally plausible; all estimates were therefore interpreted as conditional associations rather than causal effects.

The primary aim of this study was to evaluate the independent associations of parent-reported family functioning, child BAZ, and parental and child screen time with child-perceived family functioning in children aged 8–10 years. We hypothesized that parent-reported family functioning and child adiposity would be independently associated with child-perceived family functioning, whereas screen time would show limited associations. Secondary analyses compared children with optimal and suboptimal Family APGAR scores, and associations with the five individual Family APGAR items were examined exploratorily.

2. Materials and Methods

2.1. Study Design and Ethical Approval

This cross-sectional observational study was conducted with the approval of the Bursa City Hospital Scientific Research Ethics Committee and in accordance with the principles of the Declaration of Helsinki (Approval No.: 2024-10/3; Date: 12 June 2024), and is reported according to the STROBE statement. Written informed consent was obtained from parents on behalf of their children, and age-appropriate verbal assent was obtained from the children. All data were anonymized and used for scientific purposes only.

2.2. Participants

Children aged 8–10 years presenting to the Pediatric Outpatient Clinic of Bursa City Hospital between 1 July 2024 and 30 December 2024, together with an accompanying parent, were invited consecutively, and all eligible dyads who agreed to participate were enrolled; the number of dyads who declined was not recorded. Inclusion criteria required that the child had acquired reading skills and that both parent and child could complete the Family APGAR. Children with a known chronic disease or under psychiatric follow-up were not included. Psychiatric follow-up was an exclusion criterion because psychiatric conditions may be independently related to the child's perception of family functioning and to screen use; this criterion may also have excluded children from families with lower functioning (Section 5). Of the 212 dyads enrolled, 15 were excluded because the parent-reported anthropometric data of the child were biologically implausible (Section 2.3), leaving 197 dyads for analysis (Figure 1).

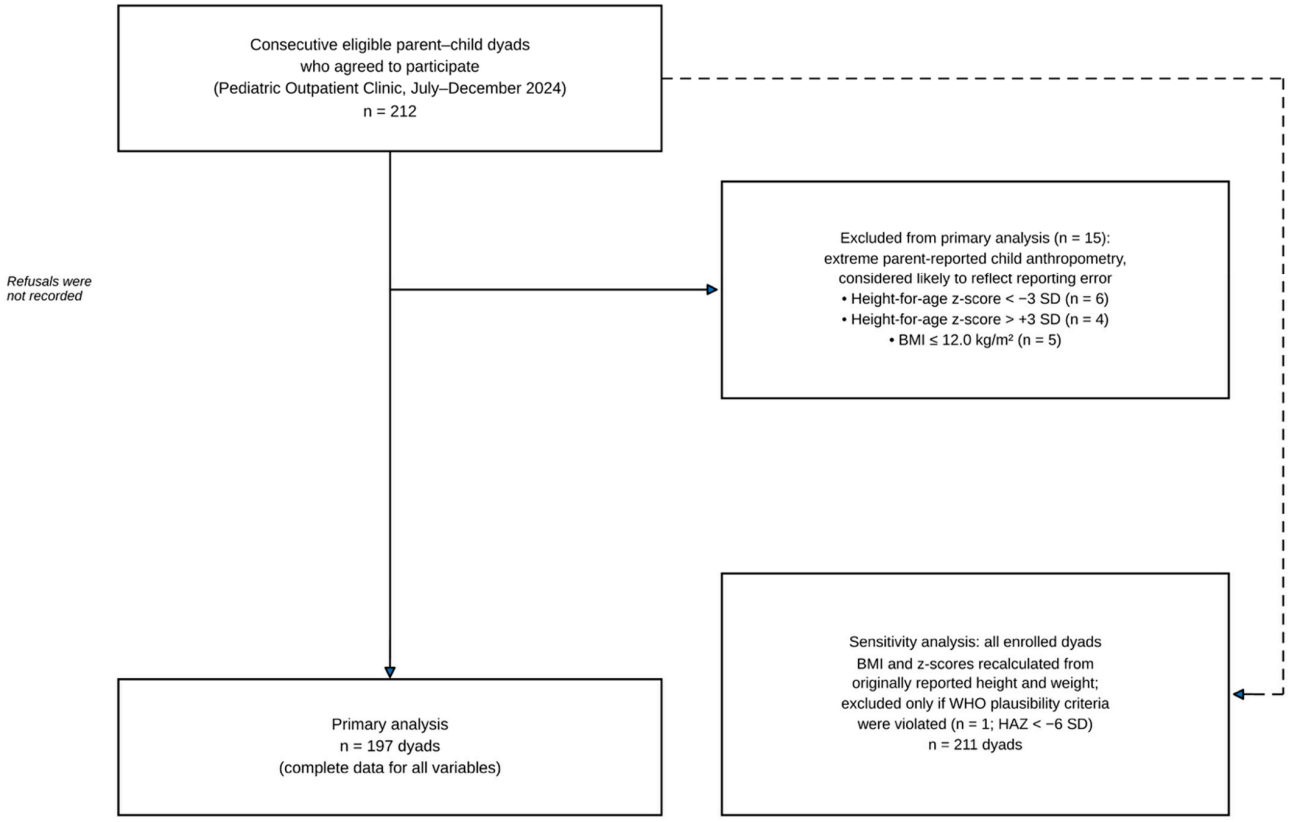


Figure 1. Flow of participants. The dashed arrow indicates the inclusion of the initially enrolled participants in the sensitivity analysis, excluding only those who exceeded the WHO plausibility limits.

A power analysis was conducted to determine the required sample size was conducted to determine the required sample size. Since no prior study directly evaluating the associa-

tion between child Family APGAR score and screen time was available, small effect sizes reported in similar studies were used, with r = 0.20 assumed. With $\alpha = 0.05$ (two-tailed) and 80% power, the minimum sample size was $n \approx 194$; adding 5% for anticipated data loss, the target was $n \approx 205$. The analyzed sample of 197 dyads provides approximately 80% power for this bivariate association. The calculation was not designed for the multivariable model or for indirect associations; the precision of the multivariable estimates is reflected in their confidence intervals.

2.3. Measures

Family APGAR Scale: The Family APGAR, developed by Smilkstein, is a 5-item self-report instrument with a 3-point Likert scale (0 = almost never, 1 = sometimes, 2 = almost always); the total score ranges from 0 to 10, with higher scores indicating greater satisfaction with family functioning [16–18]. The five items correspond to Adaptation, Partnership, Growth, Affection, and Resolve; because each component is assessed by a single item, they are referred to as items rather than subscales. The revised form adapted for children aged 8 years and older has been examined in the 8–12 age group, and psychometric evidence supporting its use in children has been reported [19]; use and construct validity have also been supported in adolescent samples [20,21]. The Turkish adaptation, validity, and reliability study was conducted by Özcan et al. in an adult sample aged 18–60 years and demonstrated acceptable psychometric properties [22]. No psychometric validation study of the Turkish Family APGAR as a child self-report in the 8–10 age group is currently available. In this study, the Turkish adult form was administered to children without modification of item wording. Parents and children completed the questionnaire separately; parents were not present while children completed it, and children could ask a member of the research team for help with reading or understanding the items. No pilot testing or cognitive debriefing was conducted before data collection to confirm that children understood the items as intended. Total scores of 0–6 were categorized as suboptimal and 7–10 as optimal family functioning; to minimize information loss, the total score was analyzed as a continuous variable in the primary analysis.

Screen Time: Screen time was assessed with a single question developed for this study, which has not been validated against a reference measure: "In a 24-h day, how many hours in total do you spend in front of a phone, television, or tablet?" Children reported their own screen time and parents reported their own, as the average over the past month. Weekdays and weekend days were not assessed separately, educational and recreational use were not distinguished, and simultaneous use of more than one device was not specifically addressed. Responses were recorded in hours per day. Extreme values (up to 18 h/day for parents) were retained as reported and examined in sensitivity analyses.

Anthropometric Measurements: Height and weight of children and parents were reported by the parent; they were not measured by the study team, and no information on clothing or footwear was available. A single value was recorded for each. BMI (kg/m^2) was calculated from the reported height and weight. Because only age in completed years was recorded, child age in months was approximated as the mid-point of the reported year of age. BAZ and height-for-age z-scores (HAZ) were calculated according to the WHO 2007 growth reference for children aged 5–19 years [23,24], and BAZ was categorized as thinness (<−2 SD), normal (−2 to +1 SD), overweight (>+1 to +2 SD), and obesity (>+2 SD). Before analysis, anthropometric data were screened for implausible values and internal consistency. Children whose reported data yielded a HAZ beyond ±3 SD ($n = 10$) or a BMI ≤ 12.0 kg/m^2 ($n = 5$) were considered to have extreme parent-reported values, suggesting a reporting error. These screening rules were not prespecified. No observation exceeded the WHO BAZ limits; one child had a HAZ below the WHO limit of −6 SD [24].

2.4. Statistical Analysis

Continuous variables are summarized as mean ± standard deviation and median (interquartile range, IQR), and categorical variables as *n* (%). Distributions were inspected using histograms, Q–Q plots, and skewness. The primary outcome was the child Family APGAR total score analyzed as a continuous variable. For secondary group analyses, child and parent Family APGAR total scores were categorized as 0–6 (suboptimal) and 7–10 (optimal). Internal consistency of the child- and parent-reported Family APGAR was estimated with Cronbach's α (95% CI, Feldt method), ordinal α based on the polychoric correlation matrix [25], and McDonald's ω from a one-factor model (95% CIs for ordinal α and ω from 1000 nonparametric bootstrap resamples), together with corrected item–total correlations.

The primary analysis was a multivariable linear regression of the child Family APGAR score on the parent Family APGAR score, child BAZ, parent screen time, and child screen time, adjusted for child age, child sex, parent age, parent sex, and parent BMI. Covariates were selected on conceptual grounds, following the principle of adjusting for pre-existing characteristics that may be related to both the correlates and the outcome [26]. Child age and sex were included because they relate to developmental stage, weight status, and screen use; parent BMI because parental and child adiposity are associated [27]; and parent age and sex because they characterize the reporting parent, whose individual perspective contributes to reports of family functioning [28]. Socioeconomic indicators, parental education, family structure, parental mental health, and body image were not collected. Physical activity, diet, and sleep were also not measured; these may lie on pathways between family functioning and adiposity rather than act as confounders, and would not necessarily be appropriate adjustment variables. Because the residuals were negatively skewed, inference was based on heteroskedasticity-consistent (HC3) standard errors, with nonparametric bootstrap percentile confidence intervals (5000 resamples) as a check. Standardized coefficients (β) are also reported. Linearity was assessed with component-plus-residual plots and by comparing each continuous correlate with a natural cubic spline (3 degrees of freedom); influential observations were assessed with Cook's distance ($>4/n$) and DFBETA, and multicollinearity with variance inflation factors.

Sensitivity analyses included exclusion of influential observations; restriction to BAZ within ±3 SD; inclusion of all enrolled children with recalculated anthropometry, excluding only observations violating the WHO 2007 plausibility limits ($n = 211$); winsorization of screen time at the 99th percentile and restriction of parent screen time to ≤12 h/day; the originally specified covariate set (child age, parent age, and parent BMI); and a proportional odds ordinal logistic regression treating the child Family APGAR score as an ordered outcome, with the proportional odds assumption examined by comparing cumulative logits across cut-points. In addition, an exploratory cross-sectional associative path model, with parent screen time as the initial variable and parent Family APGAR score, child screen time, and child BAZ as intermediate variables, was estimated by maximum likelihood with nonparametric bootstrap standard errors (5000 resamples) and is reported, with its full syntax, in the Supplementary Materials. Because the temporal order of these variables cannot be established and alternative path structures can fit the same covariance matrix equally well [29–31], their indirect associations were not interpreted as mediation.

Secondary group comparisons used the Mann–Whitney U test for continuous variables, with effect size $r = |Z|/\sqrt{N}$ and 95% bootstrap confidence intervals (2000 resamples), and Pearson's χ^2 test for categorical variables, with odds ratios (95% CI). Associations of the five child Family APGAR items with parental and child variables were examined exploratorily using Spearman rank correlation (r_s). Multiplicity was controlled with the Benjamini–Hochberg false discovery rate procedure, applied separately to two predefined families:

the 50 item-level correlations and the five parent-item comparisons between child Family APGAR groups; adjusted *p*-values (q) are reported.

The analysis approach was discussed among the authors before data analysis but was not registered or documented in a written protocol; the path model and item-level analyses are therefore exploratory. All analyses were performed in R version 4.5.2 (packages sandwich, lmtest, MASS, psych, boot, and lavaan version 0.7.2); z-scores were calculated with the anthroplus package, which implements the WHO 2007 reference. The R analysis code and lavaan model syntax are provided in Supplementary File S1. All tests were two-sided, and $p < 0.05$ was considered statistically significant.

3. Results

3.1. Participants and Sample Characteristics

Of 212 dyads enrolled, 15 were excluded because of extreme parent-reported values suggesting of reporting error, leaving 197 dyads with complete data on all variables (Figure 1). The participating parent was the mother in 152 dyads (77.2%) and the father in 45 (22.8%). The mean child age was 9.0 ± 0.8 years, and 99 children (50.3%) were girls. Based on BAZ, 47 children (23.9%) were overweight and 19 (9.6%) had obesity. Median screen time was 2.0 (IQR 1.0–3.0) h/day for children and 3.0 (IQR 2.0–5.0) h/day for parents (Table 1).

Table 1. Characteristics of the analytical sample (n = 197).

Variable	Mean ± SD or *n* (%)	Median (IQR)	Range
Child age, years	9.0 ± 0.8	9.0 (8.0–10.0)	8.0–10.0
Child sex, female, *n* (%)	99 (50.3%)		
Child height, cm	135.3 ± 8.9	135.0 (130.0–140.0)	117.0–161.0
Child weight, kg	32.5 ± 9.0	30.0 (26.0–35.0)	18.0–65.0
Child BMI, kg/m^2	17.52 ± 3.36	16.80 (15.20–19.20)	12.10–30.40
Child BAZ	0.29 ± 1.42	0.33 (−0.70–1.25)	−2.88–4.77
BAZ < −2 (thinness), *n* (%)	10 (5.1%)		
BAZ −2 to +1 (normal), *n* (%)	121 (61.4%)		
BAZ > +1 to +2 (overweight), *n* (%)	47 (23.9%)		
BAZ > +2 (obesity), *n* (%)	19 (9.6%)		
Child screen time, h/day	2.7 ± 2.0	2.0 (1.0–3.0)	0.0–11.0
Child Family APGAR score (0–10)	8.51 ± 1.48	9.00 (8.00–10.00)	3.00–10.00
Score 10 (maximum), *n* (%)	60 (30.5%)		
Score 0 (minimum), *n* (%)	0 (0.0%)		
Suboptimal (0–6), *n* (%)	23 (11.7%)		
Parent/caregiver age, years	39.6 ± 5.0	40.0 (36.0–42.0)	26.0–56.0
Parent/caregiver sex, female, *n* (%)	152 (77.2%)		
Parent BMI, kg/m^2	25.26 ± 4.04	24.70 (22.30–27.50)	17.10–38.80
BMI 25.0–29.9, *n* (%)	73 (37.1%)		
BMI ≥ 30.0, *n* (%)	22 (11.2%)		
Parent screen time, h/day	3.6 ± 2.8	3.0 (2.0–5.0)	0.0–18.0
Parent Family APGAR score (0–10)	8.07 ± 2.10	9.00 (7.00–10.00)	0.00–10.00
Score 10 (maximum), *n* (%)	72 (36.5%)		
Score 0 (minimum), *n* (%)	1 (0.5%)		
Suboptimal (0–6), *n* (%)	46 (23.4%)		

Note: No variable had missing data in the analytical sample. Height and weight were parent-reported. BMI: body mass index; BAZ: BMI-for-age z-score (WHO 2007 reference); IQR: interquartile range; SD: standard deviation. Family APGAR: Adaptation, Partnership, Growth, Affection, Resolve.

3.2. Distribution and Internal Consistency of the Family APGAR

The child Family APGAR score had a median of 9.0 (IQR 8.0–10.0) and was negatively skewed (skewness −1.09); 60 children (30.5%) obtained the maximum score of 10 and none the minimum score. Twenty-three children (11.7%) had suboptimal scores. The parent Family APGAR score had a median of 9.0 (IQR 7.0–10.0); 72 parents (36.5%) obtained the maximum and one (0.5%) the minimum score, and 46 (23.4%) had suboptimal scores (Table 1). There were no missing item responses. Internal consistency was limited for the child-reported scale (Cronbach's $\alpha = 0.54$, 95% CI 0.43–0.63; ordinal $\alpha = 0.67$, 95% CI 0.54–0.76; $\omega = 0.55$, 95% CI 0.43–0.65) and acceptable for the parent-reported scale ($\alpha = 0.79$, 95% CI 0.74–0.83; ordinal $\alpha = 0.88$, 95% CI 0.82–0.91; $\omega = 0.79$, 95% CI 0.72–0.85). Corrected item–total correlations ranged from 0.22 to 0.40 for the child scale and from 0.53 to 0.63 for the parent scale, and removal of any single item did not increase α (Table S1).

3.3. Multivariable Analysis

In the multivariable model (Table 2), a higher parent Family APGAR score was associated with a higher child Family APGAR score (B = 0.18, 95% CI 0.07–0.30; $\beta = 0.26$; $p = 0.001$), and a higher BAZ was associated with a lower child Family APGAR score (B = −0.21, 95% CI −0.37 to −0.06; $\beta = -0.20$; $p = 0.006$). Across the interquartile range, these coefficients correspond to differences of approximately 0.55 points for parent Family APGAR score (7 to 10) and −0.42 points for BAZ (−0.70 to 1.25) on the 0–10 child scale. No statistically detectable association was observed for parent screen time (B = −0.02, 95% CI −0.10 to 0.06; $p = 0.575$) or child screen time (B = −0.07, 95% CI −0.21 to 0.07; $p = 0.343$). The model explained 13.9% of the variance in the child Family APGAR score (adjusted $R^2 = 0.097$), and the four correlates together explained an additional 11.7% beyond the covariates ($F = 6.36$, $p < 0.001$).

Table 2. Multivariable linear regression of the child Family APGAR score ($n = 197$).

Variable	Unadjusted B (95% CI)	Adjusted B (95% CI)	Bootstrap 95% CI	β	*p*
Parent Family APGAR score (per 1 point)	0.17 (0.06 to 0.27)	0.18 (0.07 to 0.30)	0.09 to 0.30	0.26	0.001
Child BAZ (per 1 SD)	−0.22 (−0.37 to −0.07)	−0.21 (−0.37 to −0.06)	−0.36 to −0.07	−0.20	0.006
Parent screen time (per 1 h/day)	−0.00 (−0.08 to 0.08)	−0.02 (−0.10 to 0.06)	−0.09 to 0.05	−0.04	0.575
Child screen time (per 1 h/day)	−0.08 (−0.23 to 0.08)	−0.07 (−0.21 to 0.07)	−0.19 to 0.06	−0.09	0.343
Child age (per 1 year)	−0.02 (−0.27 to 0.23)	0.05 (−0.20 to 0.31)	−0.18 to 0.30	0.03	0.677
Child sex: male (ref. female)	−0.13 (−0.55 to 0.29)	−0.03 (−0.50 to 0.43)	−0.49 to 0.39	−0.01	0.883
Parent age (per 1 year)	0.01 (−0.03 to 0.05)	0.02 (−0.03 to 0.07)	−0.03 to 0.06	0.06	0.420
Parent sex: male (ref. female)	0.26 (−0.21 to 0.73)	0.39 (−0.18 to 0.96)	−0.16 to 0.93	0.11	0.176
Parent BMI (per 1 kg/m^2)	−0.04 (−0.10 to 0.02)	−0.04 (−0.10 to 0.01)	−0.10 to 0.01	−0.12	0.141

Note: B: unstandardized regression coefficient; β: standardized coefficient. 95% CIs and *p*-values are based on heteroskedasticity-consistent (HC3) standard errors; bootstrap CIs are nonparametric percentile intervals (5000 resamples). Unadjusted estimates are from simple linear regressions. Model $R^2 = 0.139$, adjusted $R^2 = 0.097$; $F(9, 187) = 3.35$, $p < 0.001$. Maximum variance inflation factor = 1.16. BAZ: BMI-for-age z-score; BMI: body mass index.

Residuals were negatively skewed (skewness −0.93), reflecting the ceiling effect of the outcome, without evidence of heteroskedasticity (Breusch–Pagan $p = 0.317$). There was no evidence of non-linearity for BAZ ($p = 0.390$), parent screen time ($p = 0.812$), or child screen time ($p = 0.635$) (Figure S1). Fourteen observations had a Cook's distance $> 4/n$ (maximum 0.14). The associations of parent Family APGAR score and BAZ with child Family APGAR

score were similar in all sensitivity analyses, including exclusion of influential observations (B = 0.20 and −0.21, respectively), restriction to BAZ within ±3 SD, handling of extreme screen-time values, and the originally specified covariate set (Table S2). In the proportional odds model, parent Family APGAR score (OR = 1.28, 95% CI 1.13–1.47) and BAZ (OR = 0.75, 95% CI 0.62–0.91) were associated with the ordinal child score, whereas screen time was not, and the odds ratios were similar across cut-points (Table S3). In the exploratory associative path model, no indirect association of parent screen time through parent Family APGAR score, child screen time, or BAZ was statistically detectable (all $p \geq 0.23$; Table S4, Figure S2).

3.4. Comparisons by Child and Parent Family APGAR Category

Compared with children with optimal scores, children with suboptimal Family APGAR scores had higher raw BMI (median 18.90 vs. 16.60 kg/m^2; r = 0.17, 95% CI 0.03–0.30; $p = 0.020$) and BAZ (1.19 vs. 0.16; r = 0.16, 95% CI 0.02–0.30; $p = 0.021$). Child sex, child age, child and parent screen time, and parent BMI did not differ significantly between groups (Table 3). Suboptimal parent Family APGAR scores were observed in 34.8% of the suboptimal and 21.8% of the optimal child group (OR = 1.91, 95% CI 0.75–4.84; $p = 0.168$). Among the parent Family APGAR items, only Partnership had a nominal p-value below 0.05 ($p = 0.047$), which did not remain significant after false discovery rate correction (q = 0.190).

Table 3. Characteristics according to child Family APGAR category.

Variable	Total (n = 197)	Suboptimal (n = 23)	Optimal (n = 174)	Effect Size (95% CI)	p	q
Child sex, female, n (%)	99 (50.3%)	13 (56.5%)	86 (49.4%)	OR 1.33 (0.55–3.20)	0.522	
Child age, years	9.0 (8.0–10.0)	9.0 (9.0–9.0)	9.0 (8.0–10.0)	r 0.00 (0.00–0.13)	0.997	
Child screen time, h/day	2.0 (1.0–3.0)	3.0 (1.0–4.0)	2.0 (1.0–3.0)	r 0.06 (0.00–0.21)	0.376	
Parent screen time, h/day	3.0 (2.0–5.0)	3.0 (2.0–4.5)	3.0 (2.0–4.8)	r 0.01 (0.00–0.17)	0.906	
Child BMI, kg/m^2	16.80 (15.20–19.20)	18.90 (16.70–20.20)	16.60 (15.10–19.20)	r 0.17 (0.03–0.30)	0.020	
Child BAZ	0.33 (−0.70–1.25)	1.19 (0.38–1.51)	0.16 (−0.71–1.16)	r 0.16 (0.02–0.30)	0.021	
Parent BMI, kg/m^2	24.70 (22.30–27.50)	25.00 (23.20–28.90)	24.65 (22.20–27.48)	r 0.03 (0.00–0.19)	0.632	
Parent Family APGAR score	9.0 (7.0–10.0)	8.0 (6.0–9.0)	9.0 (7.0–10.0)	r 0.13 (0.01–0.27)	0.061	
Parent Family APGAR suboptimal, n (%)	46 (23.4%)	8 (34.8%)	38 (21.8%)	OR 1.91 (0.75–4.84)	0.168	
Parent item: Adaptation	2 (1–2)	2 (1–2)	2 (1–2)	r 0.07 (0.00–0.21)	0.329	0.329
Parent item: Partnership	2 (1–2)	1 (1–2)	2 (1–2)	r 0.14 (0.02–0.28)	0.047	0.190
Parent item: Growth	2 (1–2)	2 (1–2)	2 (1–2)	r 0.08 (0.00–0.22)	0.235	0.293
Parent item: Affection	2 (1–2)	1 (1–2)	2 (1–2)	r 0.11 (0.01–0.26)	0.114	0.190
Parent item: Resolve	2 (2–2)	2 (1–2)	2 (2–2)	r 0.11 (0.01–0.26)	0.110	0.190

Note: Data are median (IQR) or n (%). Effect sizes are r = $|Z|/\sqrt{N}$ (95% bootstrap CI) for Mann–Whitney U tests and odds ratios (95% CI) for χ^2 tests (odds of female sex and of suboptimal parent score in the suboptimal vs. optimal child group). q: Benjamini–Hochberg adjusted p-value within the family of five parent-item comparisons. BMI: body mass index; BAZ: BMI-for-age z-score.

Parents with suboptimal Family APGAR scores had higher BMI than parents with optimal scores (median 26.00 vs. 24.30 kg/m^2; r = 0.14, 95% CI 0.02–0.27; $p = 0.044$), and their children had lower Family APGAR scores (median 8.0 vs. 9.0; r = 0.19, 95% CI 0.05–0.32; $p = 0.009$). Parent and child screen time, child BMI, and BAZ did not differ significantly between parent groups (Table 4).

Table 4. Characteristics according to parent Family APGAR category.

Variable	Total (n = 197)	Suboptimal (n = 46)	Optimal (n = 151)	r (95% CI)	p
Parent screen time, h/day	3.0 (2.0–5.0)	3.0 (2.0–5.0)	3.0 (2.0–4.0)	0.04 (0.00–0.19)	0.546
Child screen time, h/day	2.0 (1.0–3.0)	2.0 (2.0–3.0)	2.0 (1.0–3.0)	0.01 (0.00–0.15)	0.936
Parent BMI, kg/m^2	24.70 (22.30–27.50)	26.00 (23.62–28.80)	24.30 (22.15–27.30)	0.14 (0.02–0.27)	0.044
Child BMI, kg/m^2	16.80 (15.20–19.20)	17.20 (15.17–19.20)	16.80 (15.25–19.20)	0.02 (0.00–0.16)	0.786
Child BAZ	0.33 (−0.70–1.25)	0.42 (−0.57–1.40)	0.29 (−0.71–1.19)	0.03 (0.00–0.17)	0.699
Child Family APGAR score	9.0 (8.0–10.0)	8.0 (7.0–9.0)	9.0 (8.0–10.0)	0.19 (0.05–0.32)	0.009

Note: Data are median (IQR). Effect sizes are r = |Z|/√N (95% bootstrap CI) from Mann–Whitney U tests. BMI: body mass index; BAZ: BMI-for-age z-score.

3.5. Exploratory Item-Level Analyses

Of the 50 exploratory correlations between the five child Family APGAR items and parental and child variables, 16 had a nominal p-value below 0.05 (Table S5). After false discovery rate correction, only the correlation between the parent and child Growth items remained statistically significant (r_s = 0.27, q = 0.005). The correlations of child BMI and BAZ with the child Partnership item (r_s = −0.18 for both; q = 0.077) and all correlations involving screen time did not remain significant after correction.

4. Discussion

In this cross-sectional sample of children aged 8–10 years, child-perceived family functioning was positively associated with parent-reported family functioning and inversely associated with child BAZ, whereas no statistically detectable association was observed for parental or child screen time measured as a single duration item. These associations were consistent across sensitivity analyses but were modest, and the model explained 13.9% of the variance in child-reported scores.

4.1. Associations Between Parent- and Child-Reported Family Functioning

The positive association between parent- and child-reported family functioning (β = 0.26) persisted after adjustment for child and parent characteristics. This association does not indicate intergenerational transmission; it may reflect shared perceptions of the same family environment, as well as related response processes within dyads, because both reports were obtained at the same visit with the same instrument. Considered alongside studies supporting the use of the Family APGAR in children and adolescents [19–21], the modest strength of this association suggests that child report provides information that is not captured by parental assessment. At the item level, only the correlation between the parent and child Growth items remained significant after false discovery rate correction; because each APGAR component is measured by a single item, this finding does not allow inference about domain-specific processes.

4.2. Child Adiposity and Child-Perceived Family Functioning

The second finding is the inverse association between child BAZ and child-perceived family functioning (β = −0.20), which was accompanied by higher raw BMI and BAZ among children with suboptimal scores and was also observed in the ordinal model. This finding is consistent with systematic reviews reporting associations between family functioning and childhood overweight and obesity [2,3] and with the family-based obesity

literature emphasizing family processes [3,4]. The association was small, corresponding to approximately 0.4 points on the 10-point scale across the interquartile range of BAZ.

The cross-sectional design does not allow the direction of this association to be determined. Children with higher weight may experience weight-related teasing or criticism, including from family members, which could relate to how they perceive family relationships [32]. Conversely, family functioning has been linked to family routines such as shared meals and to children's dietary patterns, which may in turn relate to weight status [33,34]. Both explanations remain speculative in the absence of longitudinal data and of measures of diet, physical activity, sleep, and body image. Because height and weight were parent-reported, misclassification of BAZ is likely; non-differential error would tend to attenuate the association, whereas reporting errors related to family characteristics could bias it in either direction.

4.3. Screen Time and Child-Perceived Family Functioning

No statistically detectable association was observed between parental or child screen time and the child Family APGAR score. This null finding should be interpreted in light of the measurement approach: screen time was assessed with a single, unvalidated item on average daily duration, without separating weekdays and weekends, educational and recreational use, or simultaneous device use, and children aged 8–10 years reported their own screen time. Such measures are subject to considerable error, which tends to bias associations toward the null. The confidence intervals indicate that a large association per hour of screen time is unlikely in this sample; they do not show that screen use is unrelated to family functioning.

These findings are consistent with literature suggesting that total duration, independent of context and content, may be an insufficient marker. Screen time has been associated with developmental health and adiposity in some studies [5,6,14,15], whereas reviews emphasize contextual characteristics such as content, co-use, family rules, and interruption of parent–child interaction [7,8,10,11,35,36]. Studies from Southern Europe have also linked children's screen exposure to lifestyle factors such as lower adherence to the Mediterranean diet [12,13]. The current null finding therefore does not conflict with the technoference literature; it indicates that screen duration and interactional disruption are distinct constructs. Future studies should use objective measures, such as device-based monitoring, together with validated instruments assessing technoference, co-viewing, and family media practices.

4.4. Overall Appraisal

Taken together, child-perceived family functioning was associated with parent-reported family functioning and child BAZ, but not with screen duration, in this sample. These results describe conditional cross-sectional associations; they do not establish the clinical utility or incremental predictive value of assessing family functioning together with anthropometric factors, and they should be regarded as hypothesis-generating.

5. Strengths and Limitations

A strength of this study is the separate assessment of family functioning from both parent and child perspectives within the same dyads. The main associations were consistent across alternative specifications and estimators, including an ordinal model for the bounded outcome.

Several limitations should be considered. First, the cross-sectional design does not allow temporal ordering or causal direction to be determined, and reverse causality is plausible for all associations; the exploratory path model therefore does not represent mediation [30,31]. Second, the Turkish Family APGAR has not been validated as a child self-report in the

8–10 age group, the adult wording was used without modification, no pilot testing or cognitive debriefing was performed to confirm children's comprehension of the items, and internal consistency of the child-reported scale was limited (ordinal $\alpha = 0.67$). Together with the ceiling effect (30.5% of children with the maximum score), this measurement error is likely to have attenuated associations with the primary outcome; help provided by the research team when requested may also have influenced some responses. Third, child and parent height and weight were parent-reported and child age was available only in completed years, so BAZ is an approximation; 15 children with implausible reported values were excluded, which may introduce selection bias if reporting errors were related to family characteristics. Fourth, screen time was measured with a single, unvalidated item without information on content, context, device type, co-use, or weekday–weekend differences. Fifth, the study was conducted in a single outpatient clinic, refusals were not recorded, and children with chronic disease or psychiatric follow-up were not included; this may have restricted the variance of Family APGAR scores, reduced the prevalence of suboptimal family functioning, and limited generalizability. Sixth, both reports were obtained with the same instrument at the same visit, so shared method variance and related response processes within dyads may have contributed to the parent–child association. Seventh, socioeconomic position, parental education, family structure, parental mental health, physical activity, diet, sleep, and body image were not measured, and residual confounding is likely, particularly for the BAZ association. Lower socioeconomic position has been associated with higher childhood adiposity [37] and with less favorable parenting practices [38], so the inverse association between BAZ and child-perceived family functioning may be partly explained, and overestimated, by socioeconomic factors; parental mental health and body image could act similarly. Eighth, only 23 children had suboptimal scores, limiting the precision of group comparisons, and the sample size was calculated for a bivariate correlation rather than for the multivariable or path models, so small associations may have gone undetected. Finally, the analysis plan was not registered, and the model explained a modest proportion of the variance in child-reported family functioning.

6. Conclusions

In this cross-sectional study of children aged 8–10 years, higher parent-reported family functioning and lower BAZ were associated with higher child-perceived family functioning, whereas no association was detected with screen time measured as a single duration item. The BAZ association is exploratory, based on parent-reported anthropometry, and small in magnitude, and its direction cannot be determined. Children's own reports of family functioning provided information not fully captured by parent reports, and studies of screen use and family functioning require measures that capture the context and content of use.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/children13111487/s1, Table S1: Item statistics of the child- and parent-reported Family APGAR; Table S2: Sensitivity analyses of the multivariable linear regression; Table S3: Proportional odds ordinal logistic regression; Table S4: Exploratory cross-sectional associative path model; Table S5: Item-level Spearman correlations with false discovery rate-adjusted *p*-values; Figure S1: Outcome distribution and regression diagnostics; Figure S2: Exploratory cross-sectional associative path model; File S1: R code and lavaan model syntax.

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Data Availability Statement: The data presented in this study are available on reasonable request from the corresponding author. The data are not publicly available due to privacy and ethical restrictions. The analysis code and model syntax are provided in the Supplementary Materials.

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