Parents and Siblings as Role Models in Dealing With Digital Screen Media. Findings from A Media Fasting Intervention

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Research Article

Open Access &

Peer-Reviewed Article

DOI: 10.14302/issn.2381-862X.jwrh-24-5099

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Keywords:

Digital screen media; Role models; Children; parents; Survey data

Received: April 29, 2024

Accepted: June 18, 2024

Published: June 20, 2024

Academic Editor:

Ian James Martins, PRINCIPAL RESEARCH FELLOW Edith Cowan University.

Citation:

Silke Schwarz, Arndt Büssing, Hanno Krafft, Benjamin Streit, Katja Boehm, et.al (2024) Parents and Siblings as Role Models in Dealing With Digital Screen Media. Findings from A Media Fasting Intervention . Journal of Woman's Reproductive Health - 3(2):14-25. https://doi.org/10.14302/issn.2381-862X.jwrh-24-5099

Abstract

Parents' and siblings' role model motivation and function could play an important role in positively influencing both their own media behavior and that of family members. To investigate whether parents and siblings consciously take on this role model function, their intentions were being evaluated with a standardized questionnaire before a 6-week media fasting intervention. 135 pairs of parents and 178 pairs of children were included. A major component of the parents' media fasting intention to media fast was to be a role model for their children. This was particularly related to the idea that media fasting has something cleansing about it, as well as the hope of becoming more attentive and calm as a family. These parents seem to want to strengthen family cohesion and climate and protect their children from excessive media consumption. Children who want to be role models for their parents also intend to have a positive influence within the family and want to be role models for their siblings. Regression analyses revealed several predictors of the parents' intent for role model function: the hope of becoming more attentive and calm as a family, the view that media fasting has something cleansing about it, and the perception that it is good for one's children to use less digital screen media, and, inversely, age (R^2 = .35). The best predictors of the corresponding intention among the children were the desire to be a role model for their siblings, for the family to do more together again and, as for the parents, a younger age (R^2 = .57). The intentions of both groups are different, but the possibility of using less media is perceived as sensible. The role model function appears to be a relevant motivating and influencing factor regarding the conscious use of digital screen media and regulation of screen time. This should be taken into account when developing interventions.

Introduction

Excessive use of screen media (screen time) is a global public health problem

associated with negative mental and physical health outcomes. Studies have shown that extensive screen exposure is harmful, particularly in early childhood [17]. In recent years, children have had access to various digital screen media such as computers, tablets, smartphones and game consoles [22]. Studies have shown that children and young people spend more time in front of screen media as they get older (Federal Ministry of Health, 2017) and at the same time the age at which children start using screen media for the first time continues to decrease [10].

There is an urgent need to develop and evaluate measures to reduce screen time and increase time in the real natural and social world of play and work, as well as return to increase time spent in communicative interaction between parents and children instead of both being constantly distracted by their own use of digital media. The aim should be to develop innovative and scalable measures to limit screen time that are aimed at parents and their children from birth through adulthood. The need to reduce the use of screen media in early childhood has already been shown in several studies. The study by Birks et al. (2017) found that maternal cell phone use during pregnancy is associated with increased behavioral problems in the offspring. Mothers who did not use cell phones during pregnancy were less likely to have children with general behavioral problems. In particular, an association with hyperactivity and inattention was found. These results were consistent across cohorts, regardless of whether data were collected retrospectively or prospectively [1, 6]. Wade-Bohleber et al. examined 95 first-time parents who completed questionnaires at three time points: during the last trimester of pregnancy, 1.5-2 months after birth, and 3-4 months after birth. Results suggest that more impulsive and anxious parents, as well as parents with infants who experienced more difficulties, are at higher risk for problematic smartphone use during this life transition [21].

A review article by Braune-Krickau et al. including 12 studies with different methodological approaches suggested that parental smartphone use in children aged 0-5 years can be associated with changes in parental sensitivity and responsiveness. Device-based interruptions during times together appear to contribute more to these changes (technoference) than short interruptions in the relationship itself. To better understand this “technoference”, more in-depth longitudinal research is required [3]. It is known from the field of media addiction research that not only the length of use but also the content and function play an important role in problematic usage behavior [2]. However, the first and easiest way to create awareness of one's media use appears to be through conscious awareness and reduction of media time, which is why this was chosen for an intervention. The focus here is on the role model role of parents. A first pilot study on an intervention called “MedienFasten” (engl. media fasting) (www.MedienFasten.org) with 1,500 families was completed [14, 16].

The results suggest that encouraging and supporting parents to be more conscious and restrictive in their use of digital media counterbalances increases in children's physical activity, and exemplary reductions in parents' screen time can also lead to reductions in children's screen time. This confirms existing research results: the effect of role models and encouragement from parents in relation to increasing physical activity has already been demonstrated [18]. A baseline study on media use by 6 to 13-year-olds (KIM study) showed that parents' attitudes and interests in media also have an influence on how children deal with media and grow up with them [11]. In the area of media education, there is also a need for institutions (daycare centers, schools) to work together with parents to define good role models and common rules for media use [19]. Improving parenting methods, promoting parents' self-efficacy, or changing parenting styles can therefore be a promising approach to reducing young children's screen time [23]. From the field of eating behavior, it is known that parents' modeling of healthy behavior is an important method of influencing the quality of their children's diet. This may

have a stronger influence than the actual quality of the parents' diet [20, 24].

Particularly in families that belong to a minority or have a low income, parental role modeling plays an important role in the healthy behavior of their young children. Parents can therefore serve as role models to change children's health status by improving their own health-related behavior [5]. Siblings also influence each others' behaviour because they have a lasting influence both as peers and as family members. In Western countries, most siblings live together for long periods, talk to each other every day, and spend a lot of time together. Siblings are likely to spend more time together than with their parents [13], as they tend to have the longest-lasting relationship between family members – even longer than parent-child or husband-wife relationships [9, 12]. Although reviews of preschool children's screen time have found no association between the presence of siblings and sedentary activities, including television or electronic media [7, 8], the literature on development provides numerous empirical evidence that siblings can positively influence each other in cognitive, social and emotional development [13].

The present study therefore examines the question of whether both parents and their children act as role models for media use and with which specific intentions the intention to use less is associated. To this end, parents and their children were encouraged to limit their use of digital screen media as part of the media fasting intervention. The focus was on the question of which of these goals could be relevant predictors of the role model's intention.

Methodology

Description of the procedures

Before and during a voluntary 6-week fasting intervention, parents and their children were encouraged to address their screen media use habits and time spent using them (see Figures 1 and 2). For this purpose, various alternatives and offers for joint family activities in the areas of nature, play, sport, culture and nutrition were suggested. In a previous article [16], we presented the MediaFasten pilot study (www.MedienFasten.org), an open, prospective, multicenter, pseudonymized survey conducted in spring 2019. In a collaboration with the German professional association of pediatricians and adolescent doctors (Berufsverband der Kinderärzte und Jugendaerzte) an announcement was made and practices were able to contact the team if they were interested in taking part. A convenience sampling methods was used. Six practices showed their interest and contact was made where the study purpose and design were introduced to the practice team. In six pediatric and adolescent medicine practices in the state of North Rhine-Westphalia, Germany, 250 families with children from all social classes were to be recruited to actively participate in the 6-week fasting period parallel to Christian Lent. This began on March 6, 2019 and ended on April 16, 2019. The intervention was primarily designed to raise awareness among families about changing usage behavior.

The study was carried out as a cooperation project with the professional association of pediatricians and adolescent doctors (BVKJ). The families received a media fasting set from the pediatrician's office to take home. The set contained a cover letter with pediatric recommendations for parents on careful use of screen media (including the quality of the content), a media fasting calendar with 44 surprise doors to hang on the wall, 5 before and after questionnaires on the family's use of digital media (2 for parents, 3 for children), a post-questionnaire to assess the media fasting intervention, as well as postage -free addressed return envelopes for sending the completed questionnaires.

The media fasting calendar provided daily suggestions for games, fun, nutrition, exercise and

relationships for 44 days.

For participation there were no exclusion criteria other than a certain level of reading comprehension skills when answering the questionnaires; therefore, the minimum age for children to participate was set at 6 years.

For data collection, consent forms had to be signed by an adult or legal guardian of the children. A pre- and post-survey took place. In this publication, the focus is on the intentionality before the six-week Lent and the pre-intervention motivation of the role model motif. The study was reviewed and approved by the Ethics Committee of the University of Witten/Herdecke (application no. 194/2018). For a detailed description of the methodology used, see Schwartz et al. (2019).

Questionnaires

In addition to socio-demographic information, the questionnaire for parents contained eight items on the intentions of media fasting, which had an acceptable internal consistency with Cronbach's alpha = .71 and formed a common factor ("I want to help my child(ren) through media fasting be a role model."; "I think it would be good for me to use less digital media."; "I think it would be good for my child(ren) to use less digital media."; "I feel annoyed/stressed by the constant availability of digital media."; "I hope that the media fast will give me more introspection and silence."; "I hope that my child(ren) will have more time for themselves again."; "I hope that as a family we become more attentive and calm."; "There is something cathartic about the idea of media fasting."). The items were rated on a 4-point Likert scale (0 – no, not at all; 1 – somewhat no; 2 – somewhat yes; 3 – yes, definitely).

The questionnaire for children and adolescents contained eight similar items, four of which concern intentions ("I want to be a role model for my parents through media fasting."; "I want to be a role model for my siblings through media fasting."; "I hope that we can do more together as a family when everyone fasts on media."; "I hope that through the media fast I will have more time for friends."); while the content of the other four items was about screen use ("I think my parents use too much digital media."; "My parents say that I am too busy with digital media."; "I feel stressed by the amount of digital media."; "I find that I spend too much time on digital media.") are informative items that were not taken into account in the scale structure. The items were rated on a 4-point Likert scale (0 – no, not at all; 1 – somewhat no; 2 – somewhat yes; 3 – yes, definitely).

Statistics

The analysis was open-ended and descriptive; group comparisons (gender, age groups) were carried out for usage behavior, as well as correlation analyses (Spearman's rho) and stepwise regression analyses on the role model function. The significance level of this exploratory study was set at $p < 0.05$. For the correlation analyses, an $r > 0.5$ was considered a strong relationship, an r between 0.3 and 0.5 as moderate, r between 0.2 and 0.3 as weak and $r < 0.2$ as marginal and insignificant. All statistical analyses were carried out using SPSS (version 27.0).

Results

Description of the participants

In the parent group (n = 365), mothers (66%) were more frequently represented than fathers (34%) (Table 1a). The parents had an average of 2 children. The group of parents aged <40 was the strongest at 50%, followed by those aged 40-50 (42%). The parent group was slightly dominated by people with

Table 1a. Characteristics of the examined parents (n = 365)

	Number	%	M ± SD
Gender			
Female	238	66	
Male	123	34	
Age groups			
< 40 years old	178	50	
40-50 years old	148	42	
> 50 years old	30	8	
Mean age			41,2 ± 6,8
School education			
Basic Secondary school (Hauptschule)	18	5	
Secondary school leaving certificate (Mittlere)	81	23	
Basic high school diploma (Fachabitur)	74	21	
Advanced high school diploma (Abitur)	182	51	
Partner status			
Married	305	85	
With partner	37	10	
No Partner	19	5	
Number of children			2,0 ± 0,8
Number of media free days			0,3 ± 0,9

higher education (51% with a university degree and 21% with a vocational school diploma). Media-free days (based on general/average media consumption during everyday life) per week were hardly present (0.3 ± 0.9 days): 88% had no media-free days, 9% 1-2 days, 3% used more than 2 no-media days per week. There were no significant differences between men and women regarding media use (not shown).

In the group of children and young people (n = 407), 20% were 0-5 years old (but were not taken into account for the statements on media use and intentions), 34% were 6-9 years old, 29% were 10-13 years old and 17% 14-18 years old. The group of toddlers/kindergarten children was not taken into account for the following analyses so 280 school children (56% boys and 44% girls) with an average age of 10.5 ± 3.1 years were examined. Media-free days per week were hardly present (0.8 ± 1.5 days) (Table 1b): 72% had no media-free days, 16% had 1-2 days, and 12% did not use media more than 2 days per week. There were no significant differences between boys and girls (not shown). In the group

Table 1b. Characteristics of examined children and adolescents (n = 280)

	Number	%	M ± SD
Gender			
Female	124	44	
Male	156	56	
Age groups			
6-9 years	120	43	

10-13 years	101	36	
14-18 years	59	21	
Average age			10,5 ± 3,1
Media-free days			0,8 ± 1,5

of primary school children, the number of media-free days was relatively high (1.2 ± 1.8 days), medium in the 10 to 13-year-olds (0.6 ± 1.3 days), and in the 14 to 18-year-olds low (0.1 ± 0.4 days); these differences were statistically significant ($F = 13.4$; $p < 0.0001$).

Role model intentions for parents and children

The parents' intention to be a role model for their children in media fasting (89% agreement; r = 1) correlated moderately, in particular, with the idea that media fasting has "something cleansing about it" (76% agreement; r = .41) and with the hope of "becoming more attentive and calmer as a family" (76% agreement; r = .41) as well as with the feeling that it would be good for their children to use less digital screen media (77% agreement; r = .36), and with the wish that they would "have more time for themselves again" (61% agreement; r = .36). Weakly associated was the desire for more "inwardness and silence" (77% agreement; r = .28) and marginally the feeling of being "annoyed/ stressed by the constant availability of digital media" (59% agreement; r = .17) as it does not make sense (Table 2a).

Among the children, there was a strong connection between the intention to be a role model for their

Table 2a. Intention for parents' media fasting (Cronbach´s alpha = .791)

	Agreed (%)	Agreement Score [0-3]	Correlation "role model"-Item with…
„By doing media fasting I want to be a role model for my child(ren)."	88,5	2,5 ± 0,7	1.000
„I think I would benefit from consuming less digital."	75,9	2,0 ± 0,8	0,273 **
„I think it would be good for my child(ren) to consume less digital media."	76,7	2,1 ± 0,8	**0,359** **
„I feel annoyed/stressed by the permanent availability of digital media."	58,6	1,7 ± 1,0	0,174 **
„I hope that through the media fasting I will achieve more inwardness and silence."	76,5	2,0 ± 0,9	0,275 **
„I hope that my child(ren) will have more time for themselves again."	60,9	1,7 ± 1,0	**0,330** **
„I hope that as a family we will become more attentive and calmer."	76,1	1,9 ± 0,8	**0,406** **
„The idea of media fasting has something cleansing about it."	76,4	2,1 ± 0,8	**0,412** **

Moderate correlations are in bold font

Table 2b. Intention for media fasting for children and adolescents (4 item scale: Cronbach´s alpha = .755)

	Zustimmung (%)	Zustimmung Score [0-3]	Korrelation „Vorbild"-Item mit…
„Through the media fasting I want to be a role model for my parents."	50,0	1,5 ± 1,2	1,000
„Through the media fasting I want to be a role model for my siblings."	55,0	1,8 ± 1,2	**0,733** **

„I hope that if all of us participate in media fasting we will do more together as a family.“	70,0	2,0 ± 1,0	**0,401 ****
„I hope that by participating in media fasting I'll have more time for my friends.“	46,8	1,4 ± 1,3	**0,309 ****
Informative items, not contained on the scale:			
„In my opinion my parents are using digital media too much.“	48,2	1,5 ± 1,0	0,164 **
„My parents believe that I am too occupied with digital media.“	55,4	1,5 ± 1,0	-0,096
„I am actually also of the opinion that I am spending too much time with digital media.“	35,7	1,1 ± 1,0	0,095
„I am feeling stressed due to the amount of digital media.“	15,4	0,6 ± 0,9	0,016

Moderate und strong correlations are highlighted

parents (50% agreement) and to be a role model for their siblings (55% agreement; r = .73) (Table 2b). The intention to be a role model for parents was only marginally associated with the assessment that they use too much digital screen media (48% agreement; r = .16), but significantly more strongly (moderately) associated with the desire to do more together as a family (70% agreement; r = .40) and to have more time for friends again (47% agreement; r = .31). However, their own assessment of being too busy with digital screen media (36% agreement; r = .10) or being stressed by them (15% agreement; r = .02) did not show a significant connection.

Predictor analyses of role model function

Since parents' and children's role model intentions were significantly associated with different variables, stepwise regression analyses were carried out to estimate the predictive significance of these influences. An evaluation of the predictors of the parents' role model intention as a dependent variable showed (Table 3a) that this intention can be predicted most strongly by the hope of becoming “more attentive and calm as a family” (23% explanation of variance), as well as by the notion that there is “something cathartic about media fasting” (additional 7% explanation of variance) and by noting that it would be good for their children to use less digital screen media (another 3% explanation of variance). The age of the parents only had a small predictive value (1% additional explanation of variance). These four variables could explain 35% of the variance. The hope that media fasting would enable them to gain more inwardness and silence and that their children would have more time for themselves was not significant in the regression model.

Table 3a. Predictors for the role-model intention for parents

Depending variable: „By taking part in media fasting I want to be a role model for my child(ren).“, Model 4: R^2=35; F=41.6, p<0.0001		Beta	T	p
	Constant		6,842	<0,0001
	„I hope that as a family we will become more attentive and calmer.“	0,278	5,248	<0,0001
	„The idea of media fasting has something cleansing about it.“	0,268	5,383	<0,0001
	„In my opinion, it would be good for my child(ren) to be consuming less digital media.“	0,216	4,208	<0,0001
	Parental age	-0,116	-2,494	0,013

Table 3b. Predictors for role-model intention of children / adolescents (> 5 years)

Depending variable: x19 „Through media fasting I want to be a role-model for my parents “, Model 3: R^2=57; F=9.1; p<0.0001		Beta	T	P
	Constant		3,206	0,001
	„Through media fasting I want tob e a role-model for my parents“	0,651	13,680	<0,0001
	Age of the child	-0,166	-3,700	<0,0001
	„I hope that if all of us participate in media fasting we will do more together as a family.“	0,107	2,250	0,025

A similar evaluation of the predictors for the role model intention of children (older than 5 years) and adolescents showed (Table 3b) that their intention to be a role model to their parents was significantly predicted by their intention to be a role model to their siblings “To be a role model” (53% variance explanation). The age of the child explains another 3% of the variance, and the intention to “do more together as a family” only explains an additional 1%. Hoping to “have more time for friends” had no significant influence on this model. The three variables mentioned can explain 57% of the variance.

Discussion

Parents who want to be role models for their children through media fasting generally seem to want to strengthen the community and the climate within the family (“I hope that media fasting gives me more time for my children.") and to want to protect the children from media consumption, the influence of which the parents are concerned about ("The idea of a media fast has something cleansing about it.", "I think it would be good for my child(ren) to use less digital media.”). Interestingly, the small group of men seem to want to be less of a role model to their children through media fasting than women.

Children who want to be a role model for their parents through media fasting also have the intention of having a positive influence within the family (“I hope that we as a family will do more together if everyone fasts on media.”) and also be a role model for their siblings (“I want to be a role model for my siblings by avoiding media.”). The children's intention to be role models for their parents through media fasting decreases significantly as the child gets older which could also be due to increasing individualization and detachment from the parents. It is also interesting that the intention to be a role model has nothing to do with one's assessment of being too busy or stressed by digital screen media, nor that the parents use too much digital screen media. This may reflect the danger of insufficient ability to critically assess excessive media consumption, or the children examined are more confident in their use of media than their parents. At least the children recognize the role model function as desirable and have the motive to want to help others as a role model.

The regression analyses on the predictive significance of the respective intentions of both groups revealed clear differences: For the parents, the best predictors of the intended role model function were: the hope of becoming more attentive and calm as a family, the view that media fasting has something cleansing about it, and the perception that it is good for their own children to use less digital screen media because they suspect strong negative influences and therefore want to protect them. For their children, however, the best predictors were: the desire to be a role model for their siblings and to do more together in the family. Both groups share the goal of living together as a family more intensively

and having "quality time" together.

Overall, one can conclude that parents and children who are interested in the healthy behavior of other family members try or make an effort to set a good example of health-promoting behavior themselves. This observation is consistent with the results of studies in the areas of role modeling in relation to physical activity and healthy eating behavior [5, 23]. Further investigations are necessary, particularly in the area of role models for parents and siblings when dealing with digital screen media, in order to check this and be able to make more precise statements. However, the active inclusion of the role model factor in interventions to change health-related behavior when dealing with digital screen media seems sensible.

Limitations

Although the families were being recruited from medical practices to which different social classes have access, the intervention primarily reached families of slightly higher education levels than the average population. This is therefore a self-selection bias that is difficult to control since the focus here was on the voluntary nature of participation.

A response behavior in the sense of social desirability cannot be ruled out, since all information is self-reported by the respondents.

Furthermore, most of the younger children's questionnaires were completed by their parents and are therefore of limited validity with regard to children's digital screen media use. Here too, the younger children in particular may have answered in the way their parents might have wanted to hear. Already in the first study, it became clear that parents rated their children's digital screen media use higher than their children's statements about its use.

Outlook

Accelerated by the coronavirus pandemic, digital screen media are taking on an unprecedented importance in everyday life. Adults and children alike are finding more ways than ever to pass the time with digital information, communication, films, and games. The need to participate in classes online has also led to an increase in media ownership or at least availability in childhood, which is a mixed blessing due to the risk of excessive and/or harmful use. In this context, it will be interesting to investigate to what extent this development has an influence on the willingness and intentions of media fasting interventions and whether significant changes in usage behavior can be identified permanently or whether the boost in media usage due to the pandemic was just a short-term effect slowly fading away. Despite all the advantages we are currently attributing to digital screen media, we must not forget that there are also dark sides. Here it is important to strengthen the role models of parents and siblings in terms of setting an example for healthy use of media because, as the results of this intervention showed, a many participants were interested in being a good role model for other family members, and strive to ensure a healthier use of media.

Intermittent media fasting periods can make important short-term and long-term contributions to the health of society as a whole, given the rapid increase in digital usage times for both children and adults. To date, the supportive intentions within families to reduce the screen time of individual family members from within the community have not been addressed sufficiently. Based on the results of the present study, consideration could be given to making targeted use of appeals to the role model function of family members as a relevant resource in this and other health-related issues.

Conclusion

The role model function appears to be a relevant motivating and influencing factor regarding the conscious use of digital screen media and regulation of screen time. This should be taken into account when developing interventions.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Author Contributions

SS and DM designed the study and study materials and acquired the funding. SS. DM and HH performed the study. AB performed the statistics. AB, SS, DM and BS wrote the manuscript. KB assisted with the literature and TR advised on the study and implemented it. All authors read and endorsed the manuscript.

Funding

This study was supported with unrestricted funds from the Software AG Foundation, Concors Foundation, Chaja Foundation and MAHLE Foundation as well as DAK-Gesundheit.

Acknowledgments

We are grateful to all supporters of "Future of Childhood", www.lebens-weise.org and www.MedienFasten.org.

Data Availability Statement

The datasets (GENERATED/ANALYZED) for this study can be found in the (NAME OF REPOSITORY) (LINK). Please see the "Availability of data" section of Materials and data policies in the Author guidelines for more details.

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