An Investigation into the Levels of Digital Parenting, Digital Literacy, and Digital Data Security Awareness among Parents and Teachers in Early Childhood Education

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It is of great importance for teachers, students, and parents, who are among the main stakeholders in education, to understand concepts such as digital parenting, digital literacy, and digital information security awareness in that we live in a digital age, and it seems that we will never go back. The purpose of this research is to examine the levels of digital parenting attitudes of preschool parents, and the levels of digital literacy and digital data security awareness of preschool teachers and parents, and then to investigate whether these variables show general relationships with change. Designed as quantitative research, this is a correlational study. We recruited a total of 410 participants from preschool teachers and preschool parents. We used a personal information form, Digital Parenting Attitude Scale, Digital Literacy Scale, and Digital Data Security Awareness Scale as data collection instruments. Our results show that preschool teachers' digital literacy and digital data security awareness levels are higher than those of preschool parents. There is evidence that there was a statistically significant difference between digital literacy and digital data security awareness. Accordingly, we recommend that teachers should cooperate with parents on digital literacy and digital data security awareness. Further, school principals should make their greatest efforts to make this cooperation sustainable. Several activities should be conducted to boost digital literacy levels of both parents and students, and thereby increasing their digital data security awareness.

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Introduction

The fact that individuals are using digital tools to learn about parenting and to get advice from others (Gül-Ünlü, 2020). Jones (2018) notes that parenting is the act of raising children to be independent. Accordingly, Reder et al. (2003) define parenting as the process of helping children grow and develop physically, psychologically, and socially in a safe environment. Hoghughi (1997) identified five essential components of parenting: care, control, development, knowledge, motivation, resources, and opportunity. Based on this, it would not be wrong to say that parents are those who are also responsible for caring and protecting their children in terms of technological developments. So much so that, there occur changes in society as a result of emerging technology, and parents need to be in close contact with these to protect their children from possible harmful effects. Digital parenting is defined as "parental efforts and practices for comprehending, supporting, and regulating children's activities in digital environments" (Barnes & Potter, 2020). The previous literature has drawn attention to the mediator role of parents in children's activities with digital technologies (Benedetto & Ingrassia, 2020; Ciboci & Labaš, 2019). Yaman (2018), on the other hand, notes that digital parenting is also cited as internet parenting or online parenting in the literature. Kabakçı-Yurdakul et al. (2013) conceptualize digital parents as those who act accordingly in the present time, are able to use digital tools, and protect and inform their children from threads in digital platforms. Children who are familiar with tablets from their very early ages have been found better than their peers in terms of early literacy skills, including letter name or sound knowledge. This advantage is also attributed to the parenting rather than only using touch screen tablets (Neumann, 2014). Similarly, toddlers have been found to take advantage of virtual environments in which socially contingent interactions take place in terms of learning new words (Roseberry et al., 2014). Use of digital media by small kids, on the other hand, has been proved to yield positive and negative results (İnan-Kaya et al., 2018). One of the most significant advantages by digital tools is to reach information without being overwhelmed (Yaman, 2018). It seems that information in books, magazines, and encyclopedias appeal others in virtual platforms. These platforms are also used to build new friendships and are credited with their entertainment value. According to the review on the impact of digital technology on learning and teaching by the Scottish Government (2015), there is evidence to note that youngsters can improve literacy skills and have good comprehension skills with depth of learning thanks to digital tools and resources when they benefit from them under the supervision of their parents. However, apart from these benefits, there are some risks for children in digital environments. These risks may show differences based on the use of time and frequencies of the digital media tools (İnan-Kaya et al., 2018). These include psychological and verbal bullying in virtual environments, imparting misinformation, preventing people to have productive time, and harming individuals while they shop online. In this sense, without parental supervision, children may access to inappropriate contents and may be exposed to dangerous situations (Canbek & Sağıroğlu, 2006). At this precise point, it is of great value for parents to protect their children from the threads in digital platforms and to keep their children safe as they do in the real-world settings.

Digital literacy is another crucial concept that is just as important as digital parenting in today's world (Audrin & Audrin, 2021). Digital literacy refers to the learning and use of technology for personal development in a way that allows individuals to contribute to social participation safely, legally, and ethically (Özerbaş & Kuralbayeva, 2018). In other words, it is about building communication through technological tools, accessing and evaluating information critically (Kinzer, 2010). Digital literacy encompasses access to different technologies and the ability to use them (Bennet, 2014). Covello (2010) considers digital literacy to be an umbrella term and lists the sub-disciplines of digital literacy as follows: information literacy, computer

literacy, media literacy, communication literacy, visual literacy, and technology literacy.

Digital literacy is a fundamental skill in education, and also plays a vital role in the student's educational life (Anthonysamy et al., 2020). Digital literacy is mostly defined as "the ability to use information and communication technologies to find, evaluate, create and transmit information that necessitates both cognitive and technical skills" (Shalavin, 2018). Among the most common views of digital literacy in our present day is that digital literacy can be regarded as an inter-connected set of skills or competencies required for success in the digital age (List, 2019). Teachers and students must follow the latest changes and development in technology so as to keep up with them. Teachers need to increase their knowledge and develop their skills to be able to integrate technology in teaching and learning environments (Techataweewan & Prasertsin, 2017). In this sense, it can be noted that teachers bear the responsibility for being digital literate as individuals as well as parents. It is seen that students start to use technological tools from their very early ages (Tomczyk, 2020). It is therefore of utmost importance for students studying in the present digital age to have awareness on the importance of digital literacy skills (Acar, 2015). Individuals with digital literacy skills attach importance to actively protecting their current data in the virtual environment. For this, digital environments must provide personal data security.

Parents' digital literacy levels, on the other hand, may be linked to their children's attitudes and tendencies towards use of digital devices. Children's use of digital tools is likely to be influenced by their parents' amount of time with digital tools, the frequency of their use of digital tools, as well as the type of content (Lauricella et al., 2015). For the last several decades, such technological instruments as computers and mobile devices have been actively used in many spheres of life, including from school life to working environments (Canbek & Sağıroğlu, 2006). At this precise point, data security can be seen as an important issue to be considered while using digital tools and being available in virtual environments. Data security refers to all efforts towards storing data and information in digital environments, ensuring privacy and protecting them while transmitting as well as building information processing platform to be able to prevent unauthorized people to access them (Canbek & Sağıroğlu, 2006). Data security is comprised of confidentiality, integrity, and availability (Covert et al., 2020). Considering these elements is crucial so as not to appear a security vulnerability. On the other hand, it becomes difficult to protect personal data in time (Karaaslan, 2013). Most of the internet users are not aware of the threads in online platforms. Thus, it is important for organizations and individuals to be informed and thereby increasing their awareness (Chou et al., 2007). Based on this, it is seen that digital platforms include some threads and therefore parents have responsibilities. Children are mostly unable to decide if they can use a technology or how they should use it by themselves. (Selwyn & Odabaşı, 2017). In this sense, parents need to take the pivotal role in guiding children (Preradovic et al., 2016). Parents' perceptions and attitudes towards digital data security awareness, however, may differ based on their socioeconomic status, age and educational backgrounds (Durak & Kaygin, 2020). It is important for parents to act consciously and correctly about digital security in order to provide better education for future generations and make the future safer.

It is of great value for teachers, students and parents who are the main stakeholders in education to figure out such concepts as digital parenting, digital literacy, and digital data security awareness. The main purpose of this study is to examine the levels of the digital parenting attitudes of preschool parents, and the levels digital literacy as well as digital data security awareness of preschool teachers and parents, and then to delve into whether these variables show general relationships with change. The study investigates the digital parenting attitudes

of Turkish parents, considering variables like gender, age, education, computer and internet use time, number of children, and working experience. These factors impact how parents utilize technology with their children. For instance, gender influences viewpoints on technology's role in parenting, with men emphasizing learning and women perceiving it as a distraction. Older parents may be more concerned about technology risks, while education level affects tech's educational potential. More computer and internet use time exposes parents to digital parenting information, and larger families may use technology for time management. Working parents rely on technology to stay connected due to time constraints. In line with the purpose of this research, the questions below guided this study:

(1) At what level is the digital parenting attitudes of parents? Do the attitudes differ according to gender and age, educational background, daily computer use time, daily internet use time, the number of child(ren) and working experience variables?
(2) At what levels are the digital literacy and digital data security awareness of teachers? Do they differ according to gender and age, educational background, daily computer use time, daily internet use time the number of child(ren) and working experience variables?
(3) Does digital literacy show a difference between parents and teachers?
(4) Does digital data security awareness show a difference between parents and teachers?
(5) Is there a relationship among digital parenting attitude, digital literacy, and digital data security awareness?

Method

This study is to delve into the levels of the digital parenting attitudes of preschool parents, and the levels digital literacy as well as digital data security awareness of preschool teachers and parents, and then to examine whether these variables show general relationships with change. This is a quantitative correlational study that examines the relationship among the variables of digital parenting attitudes, digital literacy, and digital data security awareness. Correlational studies are used to determine the relationships between two or more variables and predict potential outcomes (McBurney & White, 2009).

Sampling

We recruited the participants through cluster and random sampling methods. In this sense, we used cluster sampling method to determine participants from different regions, provinces, and districts so that we could ensure heterogeneity. According to de Vaus (1990), cluster sampling method allows researchers to save time and other expenses by dividing the research site into geographical clusters. A total of 410 preschool parents and preschool teachers were recruited in this research. Of the 193 parents who participated in the study, 46 are male and 147 are female. On the other hand, 207 of 217 teachers are female and 10 are male.

Data collection tools

The data were collected through "Digital Parenting Attitude Scale", "Digital Literacy Scale", and "Digital Data Security Awareness Scale". Digital Parenting Attitude Scale was only responded by parents. Both parents and teachers responded the Digital Literacy Scale and the Digital Data Security Awareness Scale. Further, we used a personal information form to collect data on demographic information.

Personal Information Form

Personal information form includes such demographic information as age, gender, the number of children, educational background, daily computer use time, and daily internet use time. Teachers, on the other hand, were asked about their age, gender, work experience, educational background, daily computer use time, and daily internet use time. Expert opinion has been obtained while creating the personal information form.

Digital Parenting Attitude Scale (DPAS)

Developed by İnan-Kaya et al. (2018), the Digital Parenting Attitude Scale (DPAS) includes 12 items which were distributed into two factors as approving effective use of digital media (6 items) and protecting against digital media risks (6 items). DPAS is a five-point Likert type scale, and the choices range from "I totally agree (5)" to "I don't agree at all (1)". İnan-Kaya et al. (2018) calculated the internal consistency coefficient for the approving effective use of digital media subdimension as 0.78 and for the protecting against digital media risks as 0.72. The Cronbach's alpha measure of internal consistency was calculated, and it was found to be 0.73 for the scale in general, 0.74 for the approving effective use of digital media subdimension, and 0.75 for the protecting against digital media risks subdimension.

Digital Literacy Scale (DLS)

Originally developed by Ng (2012), the Digital Literacy Scale (DLS) was adapted into Turkish by Hamutoğlu et al. (2017). DLS includes 17 items which were distributed into four factors as attitude (7 items), technique (6 items), cognitive (2 items) and social (2 items). DLS is a five-point Likert type scale, and the choices range from "I strongly agree (5)" to "I strongly disagree (1)". During the adaptation process, the internal consistency coefficient was calculated as 0.93 for the scale in general and as 0.88, 0.87, 0.70 and 0.72 respectively in the subdimensions. We also calculated the Cronbach's alpha measure of internal consistency and found as 0.89 for the scale in general, as 0.82, 0.83, 0.71 and 0.59 respectively in the subdimensions.

Digital Data Security Awareness Scale (DDSAS)

Developed by Yılmaz (2015), the Digital Data Security Awareness Scale (DDSAS) includes 32 items. DDSAS is a five-point Likert type scale, and the choices range from "I strongly agree (5)" to "I strongly disagree (1)". Yılmaz (2015) calculated the internal consistency coefficient as 0.95. We also calculated the Cronbach's alpha measure of internal consistency and found as 0.95, as well.

Data analysis

The data of the study were analyzed through the IBM SPSS Statistics software. The data obtained cover the scores on digital parenting attitude, digital literacy, and digital data security awareness. Further, we collected data on teachers' age, gender, work experience, educational background, daily computer use time, and daily internet use time as well as parents' age, gender, the number of children, educational background, daily computer use time, and daily internet use time. We first tested the normality of distribution of the data. The cases with extreme values and missed values were removed from the data set. We then calculated Z scores of the scores related to the variables and found that the data showed normal distribution and that parametric tests could be employed for the analysis. In this sense, we used independent samples t-test, one-way variance analysis, correlational analysis as well as the descriptive statistics.

Findings

The research findings have been presented in this section. The findings related to each research problem have been presented under subheadings.

Findings related to the first research problem

The first research problem was that "At what level is the digital parenting attitudes of parents? Do the attitudes differ according to gender and age, educational background, daily computer use time, daily internet use time, the number of child(ren) and working experience variables?" The data on digital parenting attitude are presented below. Table 1 displays the statistical results of digital parenting attitude and its subdimensions.

Table 1. Descriptive statistics on the parents' digital parenting attitude levels and subdimensions

	N	X	Sd
Digital parenting attitude	189	3.89	0.40
Approving effective use of digital media	189	3.64	0.60
Protecting against digital media risks	192	4.14	0.45

As shown in Table 1, the mean score of the preschool parents' digital parenting attitude scores was 3.89. When it comes the subdimensions, we found that the mean score of the approving effective use of digital media subdimension was 3.64 and that that of the protecting against digital media risks was 4.14.

In order to test if preschool parents' digital parenting attitudes show differences in terms of age, educational background, daily computer use time, daily internet use time, and the number of child(ren), we performed independent samples t-test and variance analysis. The results on gender are presented in Table 2, while those of age are displayed in Table 3.

Table 2. The independent samples t-test results on the parents' digital parenting attitude levels in terms of gender

	Gender	N	X	Sd	t	df	p
Digital parenting	Male	46	4.02	0.37	2.55	187	0.012
	Female	143	3.85	0.41			

p<0.5

We found that there was a statistically significant difference in digital parenting attitude in terms of gender ($t_{(187)}$=2.55; p<0.5). The scores of male parents (X=4.02) were higher than those of female parents (X=3.85).

Table 3. The independent samples t-test results on the parents' digital parenting attitude levels in terms of age

	Age	N	X	Sd	t	df	p
Digital parenting	34 years and below	129	3.81	0.35	-4.05	91.8	0.000
	35 years old and above	60	4.07	0.46			

p<0.01

We found that there was a statistically significant difference in digital parenting attitude in terms of age ($t_{(91.8)}$=-4.05; p<0.01). The scores of parents older than 35 years old and above (X=4.07) were higher than those of 34 years and below (X=3.81).

According to independent samples t-test results, the parents' digital parenting attitude levels did not show a statistically significant difference in terms of educational background, daily computer use time, daily internet use time, the number of child(ren), and working experience (p>0.05).

Findings related to the second research problem

The second research problem was that "At what levels are the digital literacy and digital data security awareness of teachers? Do they differ according to gender and age, educational background, daily computer use time, daily internet use time the number of child(ren) and working experience variables?". Table 4 displays the independent samples t-test results on the parents' digital literacy levels and digital data security awareness levels in terms of gender.

Table 4. The independent samples t-test results on the parents' digital literacy levels and digital data security awareness levels in terms of gender

	Gender	N	X	Sd	t	df	p
Digital Literacy	Male	46	3.80	0.54	5.56	191	0.000
	Female	147	3.35	0.45			
Digital Data Security Awareness	Male	46	4.18	0.47	3.89	191	0.000
	Female	147	3.83	0.55			

p<0.01

As shown in Table 4, the parents' digital literacy levels and digital data security awareness levels showed a statistically significant difference in terms of gender (p<0.01). In this sense, we found that male parents' digital literacy (X=3.80) and digital data security awareness levels (X=4.18) were higher than those of female parents (X_{DL}=3.35; X_{DDSA}=3.83).

Table 5 displays the variance analysis results on the parents' digital literacy levels and digital data security awareness levels in terms of educational background.

Table 5. The variance analysis results on the parents' digital literacy levels and digital data security awareness levels in terms of educational background

		N	X	Sd	df	F	p	Difference
Digital Literacy	A. High school degree and below	52	3.19	0.33	2;192	12.837	0.000	C>A B>A
	B. Associate degree	80	3.49	0.49				
	C. Undergraduate degree and above	61	3.64	0.58				
Digital Data Security Awareness	A. High school degree and below	52	3.51	0.50	2;192	24.497	0.000	C>A B>A
	B. Associate degree	80	4.06	0.43				
	C. Undergraduate degree and above	61	4.07	0.56				

p<0.01

As shown in Table 5, the parents' digital literacy levels ($F_{(2-192)}$=12.837; p<0.01) and digital data security awareness levels ($F_{(2-192)}$=24.497; p<0.01) showed a statistically significant difference in terms of educational background. Based on the post-hoc results, we found that digital literacy and digital data security awareness levels of parents with undergraduate degree and above were higher than those parents with high school degree and below. On the other hand, digital literacy and digital data security awareness levels of parents with associate degree were higher than those parents with high school degree and below.

Table 6 displays the variance analysis results on the parents' digital literacy levels and digital data security awareness levels in terms of daily computer use time.

Table 6. The variance analysis results on the parents' digital literacy levels and digital data security awareness levels in terms of daily computer use time

		N	X	Sd	df	F	p	Difference
Digital Literacy	A. one hour and less	112	3.34	0.45	3;189	11.245	0.000	D>A, B C>A, B
	B. 1-3 hours	44	3.44	0.45				
	C. 4-6 hours	16	3.72	0.69				
	D. 7 hours and more	21	3.94	0.49				
Digital Data Security Awareness	A. one hour and less	112	3.79	0.54	3;189	8.378	0.000	D>A, B C>A
	B. 1-3 hours	44	3.92	0.46				
	C. 4-6 hours	16	4.26	0.60				
	D. 7 hours and more	21	4.32	0.49				

p<0.01

As shown in Table 6, the parents' digital literacy levels ($F_{(3-189)}$=11.245; p<0.01) and digital data security awareness levels ($F_{(3-189)}$=8.378; p<0.01) showed a statistically significant difference in terms of daily computer use time. Based on the post-hoc results, we found that digital literacy and digital data security awareness levels of parents who spend 7 hours and more on computer were higher than those who use computers one hour or less and between 1-3 hours. Further, we found that digital literacy levels of parents who spend 4-6 hours on computer were higher than those who use computers one hour or less and between 1-3 hours. The results showed that digital data security awareness levels of parents who spend 4-6 hours on computer were higher than those who use computers one hour or less. Table 7 displays the variance analysis results on the parents' digital literacy levels and digital data security awareness levels in terms of daily internet use time.

Table 7. The variance analysis results on the parents' digital literacy levels and digital data security awareness levels in terms of daily internet use time

		N	X	Sd	df	F	p	Difference
Digital Literacy	A. one hour and less	39	3.21	0.44	3;189	9.533	0.000	D>A, B C>A
	B. 1-3 hours	103	3.45	0.45				
	C. 4-6 hours	35	3.55	0.53				
	D. 7 hours and more	16	3.94	0.64				
Digital Data Security Awareness	A. one hour and less	39	3.73	0.51	3;189	9.211	0.000	D>A, B, C
	B. 1-3 hours	103	3.86	0.54				
	C. 4-6 hours	35	4.02	0.48				
	D. 7 hours and more	16	4.49	0.44				

p<0.01

As shown in Table 7, the parents' digital literacy levels ($F_{(3-189)}$=9.533; p<0.01) and digital data security awareness levels ($F_{(3-189)}$=9.211; p<0.01) showed a statistically significant difference in terms of daily internet use time. Based on the post-hoc results, we found that digital literacy levels of parents who spend 7 hours and more on internet were higher than those who spend one hour and less and 1-3 hours on internet and that digital literacy levels of parents who spend 4-6 hours and more on internet were higher than those who spend one hour and less. Further, there is evidence that digital data security awareness levels of parents who spend 7 hours and more on internet were higher than those whose internet use time was one hour or less, 1-3 hours and 4-6 hours.

The parents' digital literacy levels and digital data security awareness levels did not show statistically significant difference in terms of age and the number of children (p>0.05). Further, the teachers' digital literacy levels and digital data security awareness levels did not show statistically significant difference in terms of gender, age, educational background, daily computer use time, daily internet use time, and working experience (p>0.05).

Findings related to the third research problem

The third research problem was that "Does digital literacy show a difference between parents and teachers?" and the results are presented below. Table 8 displays the independent samples t-test results on the digital literacy levels of parents and teachers.

Table 8. The independent samples t-test results on the digital literacy levels of parents and teachers

Group	N	X	Sd	t	df	p
Parent	193	3.46	0.51	-8.012	408	0.000
Teacher	217	3.86	0.50			

p<0.01

There was a statistically significant difference between parents' and teachers' digital literacy levels (t=-8.012; p<0.01), and this difference was in favor of teachers. Accordingly, teachers' digital literacy levels (X=3.86) were higher than those of parents (X=3.46).

Findings related to the fourth research problem

The fourth research problem was that "Does digital data security awareness show a difference between parents and teachers?" and the results are presented below. Table 9 displays the independent samples t-test results on the digital data security awareness levels of parents and teachers.

Table 9. The independent samples t-test results on the digital data security awareness levels of parents and teachers

Group	N	X	Sd	t	df	p
Parent	193	3.91	0.55	-3.431	408	0.001
Teacher	217	4.09	0.48			

p<0.01

As shown in Table 9, there was a statistically significant difference between parents' and teachers' digital data security awareness (t=-3.431; p<0.01) and this difference was in favor of teachers. Accordingly, teachers' digital data security awareness levels (X=4.09) were higher than those of parents (X=3.91).

Findings related to the fifth research problem

The fifth research problem was that "Is there a relationship among digital parenting attitude, digital literacy, and digital data security awareness?" and the results are presented below. Table 10 displays he correlation analysis results on digital parenting attitude, digital literacy and digital data security awareness.

Table 10. The correlation analysis results on digital parenting attitude, digital literacy and digital data security awareness

		Digital data security awareness	Digital parenting attitude
Digital parenting attitude (Parent)	N	189	-
	R	0.227	
	p	0.002	
Digital literacy (Parent)	N	193	189
	R	0.559	0.361
	p	0.000	0.000
Digital literacy (Teacher)	N	217	-
	R	0.528	
	p	0.000	
Digital literacy (Total)	N	410	-
	R	0.559	
	p	0.000	

p<0.01

There was a statistically significant difference between parents' digital literacy levels and digital data security awareness levels at moderate levels (r=0.559; p<0.01). Further, there was a statistically significant difference between parents' digital literacy levels and digital parenting levels at low levels (r=0.361; p<0.01). Another result was that there was a statistically significant difference between parents' digital data security awareness levels and digital parenting levels at low levels (r=0.227; p<0.01). We found that teachers' digital literacy levels and digital data security awareness levels at moderate levels (r=0.528; p<0.01). When the scores are evaluated all together, there was a statistically significant difference between parents' and teachers' digital literacy levels and digital data security awareness levels at moderate level (r=0.559; p<0.01).

There was a statistically significant relationship between parents' digital literacy levels and digital data security awareness levels at moderate levels (r=0.559; p<0.01). Further, there was a statistically significant relationship between parents' digital literacy levels and digital parenting levels at low levels (r=0.361; p<0.01). Another result was that there was a statistically significant relationship between parents' digital data security awareness levels and digital parenting levels at low levels (r=0.227; p<0.01). We found that there was a statistically positive relationship between teachers' digital literacy levels and digital data security awareness levels at moderate level (r=0.528; p<0.01). When the scores are evaluated all together, there was a statistically positive relationship between parents' and teachers' digital literacy levels and digital data security awareness levels at moderate level (r=0.559; p<0.01).

Discussion and Conclusion

This study was to examine the levels of digital parenting attitudes of preschool parents, and the levels digital literacy as well as digital data security awareness of preschool teachers and parents. Our findings have shown that preschool parents' digital parenting attitude, digital literacy and digital data security awareness levels differed significantly in terms of gender. In this sense, there is evidence that male parents scored higher in all variables than female ones. Similarly, there was a statistically significant difference in preschool parents' digital parenting attitude, digital literacy, and digital data security awareness levels in terms of age. In this sense, there is evidence that those parents older than 35 years old and above scored higher than those of 34 years and below. On the other hand, there was no statistically significant difference in

terms of preschool parents' educational background, daily computer and internet use time, and the number of children. Our finding contradicts with the results of Yaman (2018), who concluded that digital parenting self-efficacy levels of secondary parents differed significantly in terms of educational background and that parents' digital parenting attitude scores got lower as the number of children increased. This finding is different from our finding, and it may have resulted from the school level as our sampling was based on the preschool parents. Digital parenting behaviours of parents may show differences according to what they consider as risk factors (İnan-Kaya et al., 2018). Manap and Durmuş (2020) concluded that parents know that negligence is wrong and are aware of the fact that children are at greater risk when they cannot follow children's digital tool use for a long time. Further, they concluded that when parents are engaged with their phones for a long time, their children take it as a model, and when the children try to communicate with them while dealing with the phone, the rejection behaviors exhibited by the parents are again modeled on the children and the children are adversely affected by this. Based on this, it can be noted that the education level of parents has a key role in being aware of the risks in digital environments.

Another finding of us is that there was a statistically significant difference in parents' digital literacy and digital data security awareness in terms of educational background. In this sense, digital literacy and digital data security awareness levels of parents with undergraduate degree and above were higher than those with high school degree and below. Further, those with associate degree scored higher than those with high school degree and below. Another statistically significant difference in parents' digital literacy and digital data security awareness was found in terms of daily computer use time. In this sense, those with seven and above hours in computer use scored higher than those using computer one hour and less as well as one-three hours. We also found that digital literacy levels of those who spend 4-6 hours on computer were higher than those who use computers one hour or less and between 1-3 hours. There is also evidence that digital data security awareness levels of parents who spend 4-6 hours on computer were higher than those who use computers one hour or less. What is more, the parents' digital literacy levels and digital data security awareness levels showed a statistically significant difference in terms of daily internet use time. In this sense, there is evidence that digital literacy levels of parents who spend 7 hours and more on internet were higher than those who spend one hour and less and 1-3 hours on internet and that digital literacy levels of parents who spend 4-6 hours and more on internet were higher than those who spend one hour and less. Further, there is evidence that digital data security awareness levels of parents who spend 7 hours and more on internet were higher than those whose internet use time was one hour or less, 1-3 hours and 4-6 hours. We found no statistically significant difference in digital literacy and digital data security awareness levels of preschool parents in terms of age and the number of children. Further, there was no statistically significant difference in teachers' digital literacy and digital data security awareness levels in terms of gender, age, educational background, daily computer use time, daily internet use time, and working experience. Previous literature has shown that there are some studies which concluded that digital literacy and digital parenting showed statistically significant differences in terms of such demographics as gender and age (Barnes & Potter, 2020; Kubiatko et al., 2010; Nikken & Schols, 2015; Zin et al., 2000), whereas there are others which showed no statistically significant differences in terms of such demographics as gender and age (Karasu & Arıkan, 2016; Maden et al., 2018; Mendoza, 2018; Tomczyk, 2019). Based on this, it can be noted that it is important to consider the heterogeneity and diversity in such concepts as digital literacy and digital data security awareness, and numerous factors affecting them (Kajee, 2016). Further, Lauricella et al. (2015) pointed out that parents' high levels of digital literacy and digital data security awareness may be important for children's proper use of digital tools. In this respect, we can note that being a parent in the digital world

does not mean that the child has access to technologies such as computers and phones. The rapid change of technology has changed parenting roles in a similar way and has brought new responsibilities on parents. Parents have the responsibility to guide their children to use digital technologies safely, effectively, and consciously (Törley, 2020; Yaman et al., 2020). Durak and Kaygin (2021) concluded that parents' perceptions and attitudes towards about digital data security awareness differ depending on their socioeconomic status, age and education level. We have obtained similar findings in this present study, as well.

The results showed a statistically significant difference between parents' and teachers' digital literacy levels and this difference was in favor of teachers themselves. This means that teachers' digital literacy levels are higher than that of parents. Likewise, there is evidence that parents' and teachers' digital data security awareness levels differed statistically significantly, and this difference was in favor of teachers. This means that teachers' digital data security awareness levels are higher than that of parents. While male parents have higher scores than female parents in terms of digital literacy and digital data security awareness, teachers who are mostly females have higher scores than parents in terms of digital literacy and digital data security awareness. This finding may have resulted from the fact that teachers participate in in-service trainings almost every semester to get informed about and to increase their awareness of digital literacy and digital data security awareness. It is known that all teachers are provided with in-service trainings on these issues. Mark and Nguyen (2017) note that teachers and parents must cooperate in digital data security. By doing so, students can be made to gain digital citizenship skills effectively (Hollandsworth et al., 2011). Given that teachers' digital literacy and digital data security awareness levels are higher than those of parents, it is fundamental for teachers to build this cooperation and to manage it. 6.4% of total teachers working in pre-schools in Turkey are male (MoNE, 2021). Accordingly, we didn't consider the gender variable in the comparative analysis as there was a large difference between the number of male and female teachers participating in this present study.

There was a statistically significant relationship between preschool parents' digital literacy and digital data security awareness at moderate level. On the other hand, we found a statistically significant relationship at low level between reschool parents' digital literacy and digital parenting levels. Preschool parents' digital data security awareness and digital parenting levels showed a statistically significant relationship at low level. Teachers' digital literacy levels and digital data security awareness levels showed a statistically significant relationship at moderate level. When evaluating all scores by the participants, there is evidence that there was a statistically significant relationship between parents' and teachers' digital literacy levels and digital data security awareness levels at moderate level. Accordingly, we can conclude that as the participants' digital literacy levels increase, so do their digital data security awareness levels. There is a correlation between them. Göldağ (2021) corroborates with our finding and suggests that there is a significant relationship between university students' digital literacy levels and digital data security awareness levels at high level. Similarly, Dönmez (2019) is in line with this finding and notes that high school students' digital literacy levels and digital data security awareness levels showed a statistically significant relationship at high level. This present study was conducted at preschool level and has concluded similar results with Göldağ (2021) and Dönmez (2019).

Limitations and recommendations

This present study has concluded that there is a statistically significant relationship between digital literacy levels and digital data security awareness levels of individuals. There

is also evidence that teachers' digital literacy levels and digital data security awareness levels are higher than those of parents. Based on the results from this research, we recommend that teachers should cooperate with parents on digital literacy and digital data security awareness. Further, school principals put their greatest efforts to make the said cooperation sustainable. Several activities should be conducted to boost digital literacy levels of both parents and students, and thereby increasing their digital data security awareness. New studies can be conducted using different variables that may be associated with the variables addressed in the research. Different statistical analyses can be performed in future studies on the same theme.

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