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Comparison of Children's Social Problem-Solving Skills Who Play Videogames and Traditional games: A Cross-Cultural Study

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Abstract

Social problem-solving is a skill that needs to be developed starting from an early age in order to cope with the problems encountered in all areas of individual's lives. Studies trying to explain the influence of children's games (including videogames and more traditional games) on social problem-solving skills examining only a single game are arguably limited because most children do not play a single game in their daily lives and prefer to play a variety of different games. Therefore, the present study investigated the extent to which videogames and traditional games are associated with problem-solving skills among children across two different cultures (i.e., Turkish and British). The study comprised 523 schoolchildren (aged 9-11 years). Of these, 255 of them were studying in the UK (53.33% girl) and 268 of them were studying in Turkey (52.24% girl). The results showed that British children played videogames more than Turkish children while Turkish children spent significantly more time playing traditional games than British children. Boys in both samples spent more time playing videogames than girls. Using the Social Problem Situations Inventory for Children (SPSIC), girls' SPSIC scores were higher than boys' scores and children who played videogames for less than one hour a day had significantly higher SPSIC scores than those who played videogames for four hours or more per day. In both cultures (Turkish and British), action and role-playing videogames were the most preferred genres by children while simulation and puzzle games were the least preferred genres. In relation to traditional games, British children mostly preferred to play sport games while Turkish children mostly preferred action games. Action-adventure videogames were a negative predictor of SPSIC scores while simulation and puzzle games and the videogame genres whose primarily production purposes were serious and educational were positive predictors of SPSIC scores. Moreover, action, strategy, role-playing and sport traditional game genres were positively predicted SPSIC scores.

Keywords: Cross-cultural projects, Games, Elementary Education, Human-computer interface, 21st century abilities

1. Introduction

Problem solving skill is one of the most important skills that individuals should have in today's modern society and is regarded as a skill that can be acquired at early ages in life and developed in suitable environments (Craig et al., 2016; Shure, 2001; Sun et al., 2018; Webster-Stratton et al., 2001). It is important to acquire social problem-solving skills from childhood. Given that children's physical, spiritual and mental development is still ongoing, they could more influenced by daily life problems that they cannot cope with compared to adults. Training in problem-solving skills is a process that begins in the family during the early years and continues at school age (Chan & Fong, 2011; Düşek & Ayhan, 2014). This skill-training process, which begins among families, is systematically shaped and carried forward through formal education.

Moreover, the gaming environment is considered to be another important factor in which children can acquire and develop problem-solving skills. (Gürbüz et al., 2017; Li et al., 2016; Lorusso et al., 2018; Petty & de Souza, 2012; Rubin-Vaughan et al., 2011). In the literature, there are many studies that have been conducted to examine the influence of videogames on children's social problem-solving skills (Adachi & Willoughby, 2013; Chuang & Chen, 2009; Craig et al., 2016; Dindar, 2018; Eseryel et al., 2014; Jurdi et al., 2018; Kang et al., 2017; Rubin-Vaughan et al., 2011; Yang, 2012). However, when these studies are examined, it is seen that the videogames used were either specially developed by the researchers or were modified versions of the existing videogames. On the other hand, it is not known what effect the videogames that children prefer and frequently play in their daily lives have on their social problem-solving skills. Furthermore, there are only a few studies that focus on the effects of traditional games on children's social problem-solving skills (e.g., Li et al., 2016; Petty & de Souza, 2012; Piscalkiene, 2009), that makes the present study both novel and important.

It has been found that the studies conducted using videogames and traditional games generally focus on a single game. However, studies show that children prefer to play more than one type of videogame or traditional game simultaneously in their daily lives (Donati et al., 2019; Ferreira et al.,

2021; Kinzie & Joseph, 2008; Oflu & Yalçın, 2019; Prena & Sherry, 2018; Sherry et al., 2013). In other words, they do not stick to playing single games. This situation raises the need to evaluate all of the videogames or traditional games preferred by children. Therefore, in the present study, the purpose was not only to classify videogames and traditional games according to their types that children prefer in daily life but also to determine what extent these games predict their social problem-solving skills.

1.1. Traditional games vs. videogames

The current knowledge base on when games were first played is debatable and open to interpretation (Brown, 2020; Onur, 1992). However, two basic approaches about the emergence of the games provide an idea. The first approach posits that the emergence of games began with the emergence of the humankind and "Homo Sapiens" (McNeill, 2013). This approach argues that games are a part of culture and that the existence of human societies is needed for culture. However, the second approach posits that the emergence of games is independent of culture. Huizinga (1980) claimed that games' history is much older than culture and that the basic games were determined by pre-human animals who wanted to gain pleasure and improve their skills.

Although there is no consensus on how and when games emerged, it seems that there is an agreement on the fact that traditional games have a very important place in terms of children's development. The pleasure and enjoyment of playing games helps children to feel good and contributes to their emotional development (Bishop, 2013). Since children have many different experiences such as discovering new places, making new friends, and adapting to new situations through games, playing games can positively affect their cognitive, language, and social development (Furió et al., 2013; Hsieh et al., 2016; Kovačević & Opic, 2014). Furthermore, gross motor skills (running, climbing, jumping, etc.) and fine motor skills (cutting, punching, binding, etc.) that are repeatedly exhibited during various games, not only improves children's physical skills, but also helps them recognize their own bodies (Pic et al., 2019).

Playing a game has been defined as "voluntary activity or occupation executed within certain fixed limits of time and place, according to rules freely accepted but absolutely binding, having its aim in itself and accompanied by a feeling of tension, joy and the consciousness that it is 'different' from 'ordinary life'" (Huizinga, 1980, p.28) and the term 'tradition' represents a custom that has been passed down from one generation to the present (Thalib & Ahmad, 2020). Games have also been described as "children's work" and is a lot fun for them. The voluntary nature of games is considered as one of the crucial factors for traditional games. Although playing games is stimulating and helps children's cognitive, language, social-emotional, and moral development (Kovačević & Opic, 2014; Lavega et al., 2014; Pic et al., 2019), the main purpose of playing childhood games is to have fun and take pleasure (Else, 2009, p. 7-8). Moreover, it is almost not possible to take pleasure from an action that is not done voluntarily. In this respect, traditional games can be defined as all the games that children voluntarily participate in, have specific cultural characteristics and rules, and that are not played behind the screen of an electronic device. Furthermore, the term 'physical game' is also used alongside with the term 'traditional game' in studies that have investigated their effect among videogame players (Clark et al., 2016; Fang et al., 2015; Khoo et al., 2008).

Many decades ago, children could only engage in traditional games. However, technological developments and the rise of the internet, means that children now have the opportunity to play games electronically (Yılmaz et al., 2017). With increasing popularity of mobile gaming platforms such as smartphones, tablets, and handheld gaming consoles, videogames have increasingly becoming one of the most popular leisure time activities for children. Moreover, videogames can now play be played at anytime and anywhere through these electronic devices (Furió et al., 2013). The term 'videogame' in the present paper is used to refer to electronically controlled screen-based games played on any hardware platforms (Funk et al., 2003).

While the first generation of videogames commonly focused on entertainment, more contemporary games not only entertain but can also be used in a wide variety of educational and health settings as tools for training, education, learning, behavior change, and therapeutic intervention (Annetta, 2010;

Griffiths et al., 2017). Consequently, videogames are typically categorized as either entertainment, educational or serious/educational serious according to their primarily production purpose (Boyle et al., 2016; Lamb et al., 2014). While the primary focus of entertainment videogames is to give pleasure to those playing and to entertain them, one significant problem with educational and serious videogames is that the categories and terms are often confounded and used interchangeably in related literature. There is no clear distinction between educational and serious or educational serious videogames but while serious games are mainly designed for training, simulation, and education in virtual environments by using real life examples (Lamb et al., 2018; Susi et al., 2007), educational videogames are not only used for training but also provide content knowledge by incorporating specific pedagogical approaches (Annetta, 2010). However, no similar categorization or consensus has been reached related to traditional games. Videogames, which consist of a combination of digital codes, also have a modular structure (Manovich, 2002). In other words, if necessary, they can be updated by adding new features or removing existing features or they can be redesigned with desired features. The lack of such flexibility in traditional games may be the most important obstacle to categorizing them by primary production purposes.

There is a variety of videogames genres posited by researchers but no agreed upon classification or taxonomy exists. However, there are some basic classifications (role-playing, simulation, action, adventure, strategy, sport) that are widely accepted in the field. (Apperley, 2006, Arsenault, 2009; Braun et al., 2016; Clanton, 1998; Gros, 2007; Lee et al., 2007). In simulation games, the realistic scenarios in life (i.e., construction, manufacture) are imitated (Braun et al., 2016). Sport games are based on sports and in strategy games, a historical or fictional situation is recreated to allow the players to devise an appropriate strategy to achieve a goal (Gros, 2007). Action games are reaction-based games and the main goal is often killing as many opponents as possible while avoiding being killed (Nelson & Strachan, 2009). In role-playing games in which an imaginary world is the setting, players can freely choose how to explore the created and relatively large game world and try to progress by solving the mystery they encounter (Hitchens & Drachen, 2009). Adventure games focus on navigating a world by expressing intent (e.g., click on the door to leave), and solving key and combination lock puzzles (Clanton, 1998). However, there are some videogame genres on which no consensus has been reached have been considered as stand-alone genres. For example, while the racing/driving game genre is treated as a sub-genre of action games in the classification of Clanton (1998), it is considered as a sub-genre of simulation in the classification of Apperley (2006). The racing/driving videogame genre was regarded as stand-alone genre in a study conducted by Arsenault (2009). In addition, during the classification procedure in the present study, some videogames that British and Turkish children preferred did not completely fit any of aforementioned genres (particularly those that were puzzle-based or computerized versions of traditional word-based games).

In relation to traditional games, arguably the most cited classification of games is that formulated by Caillois (1958) who posited four game type classifications - *agon* (competition), *alea* (chance), *mimicry* (simulation) and *ilinx* (vertigo). In the present study, the authors developed their own typology based on specific characteristic features. For example, playing with dolls/teddy bears, or dressing up dolls were themed as role-playing games. Games played with a rope (*e.g., çin çan game*) were themed as '*rope games*', games played with Lego or puzzles were themed as '*puzzle games*', and sport-based games were themed as *sports games* (*e.g., football, swingball*). Furthermore, games where strategy and intelligent are used together (*e.g., tic-tac-toe game*) were themed as '*strategy-intelligence*' games and where action involved (*e.g., hide and seek*) were themed as '*action* games. (Table 4 in the Results section contains a complete list of the genres).

1.2. Social problem-solving and children's games

Individuals cope with complex problems in their daily lives with the help of advanced problem-solving skills. This skill is also one of the most fundamental skills that the modern business world demands from individuals (Care et al., 2016; Shute et al., 2016). The problems encountered in social life are called unstructured (social) problems, and unlike structured problems, they do not have a definite answer and the solution can vary depending on the individual, situation and/or the underlying reasons of the problem (Jonassen, 1997, 2013; Simon, 1973). The information necessary to solve this problem

type is much more complex, comprehensive, and multidisciplinary (Laxman, 2010). Therefore, this type of problem, which requires solvers to develop strategies and to think critically and creatively, can present advantageous situations for learners in their social lives (Chin & Chia, 2006; Roth, 1994). In addition, individuals who cannot properly solve their social problems may also have difficulties in adapting to their social lives, and these problems may cause the emergence of unsociable identities. Therefore, appropriate skill training starting from childhood is important for acquiring and/or supporting social problem-solving skills.

Studies show that playing games (both traditional games and videogames) which is one of the indispensable activities of children contributes to the development of children's social problem-solving skills (Bishop, 2013; Hamlen, 2018; Petty & de Souza, 2012; Sanchez et al., 2009; Sung & Hwang, 2018; Yang, 2015). The reason is that during the game, many unstructured (social) problems are encountered, and decisions are made as in real life, solutions are analyzed, and the problems are tried to be solved. Also, games include many characteristics of social problem-solving such as unknown outcome, multiple paths to a goal, construction of a problem context, or collaboration with other players in the case of multiple gaming (Ebner & Holzinger, 2007). Engaging in traditional games helps children to gradually expand their world, improve their skills, develop strong friendships, and enhance personal freedom as well as have fun (Bishop, 2013). Therefore, the game process is also regarded as an effective activity for acquiring social problem-solving skills (Hurwitz, 2002; Hromek & Roffey, 2009; Plummer, 2008). However, the limited number of empirical studies in literature examining the association between playing traditional games and children's problem-solving skills indicates the need for this type of a study.

In addition, the widespread use of videogames has caused game preferences to change over time among children. Many researchers note that in contemporary society, videogames are one of the most important entertainment activities for children and young people (Balakrishnan & Griffiths, 2018; Martinovic et al., 2016; Yılmaz et al., 2017). The fact that children are increasingly preferring to play videogames rather than traditional games has led researchers to become more interested in the psychosocial impacts of videogame playing (Griffiths et al., 2012). Many studies have been conducted on the positive and negative aspects of videogames on children, and according to the findings obtained, these games may have harmful aspects as well as beneficial aspects depending on their content, context, and amount of time played (Anderson & Bushman, 2001; Dowsett & Jackson, 2019; Fazeli et al., 2020; Griffiths. 2008; Gros, 2007; Lobel et al., 2017; Murias et al., 2016; Shliakhovchuk & García, 2020). All these findings show that it would not be right to draw general conclusions as to whether videogame playing is beneficial or harmful. Therefore, determining the types of games played by children according to their content as well as determining to what extent game types predict their social problem-solving skills will contribute to the discussions regarding videogames in the literature.

1.3. The present study

The present study was carried out in two different cultures (Turkey and England). The study attempted to determine whether children's game preferences differed depending on their culture. In addition, the study examined the association between game types and the children's social-problem solving skills in different cultures and to investigate whether there was a cultural effect. Games are one of the most important elements that create and accompany culture (Huizinga, 1980). Furthermore, studies carried out to understand the development of games and their distribution globally show that the games that emerged in one society spread to other societies as a result of social interactions, but each society uses games by adapting them according to their cultural characteristics (Browne, 2018; 2020). This means that culture is also an effective parameter in developing and shaping of games. Therefore, in the present study the concept of 'different culture' was preferred rather than different country. Moreover, the study examined the association between traditional game types and children's social problem-solving skills. This study also provided the opportunity to understand the association between videogames and traditional types and children's social problem-solving skills. The study was exploratory, therefore there were no specific hypotheses.

2. Method

2.1. Participants

In the present study, two different samples from two different cultures were included comprising children aged 9-11 years studying in Turkey and England. The children in the British sample group comprised 255 students (53.3% girls, $M_{age=}$10.11 years) while the children in the Turkish sample group comprised 268 students (52.2% girls, $M_{age=}$9.75 years). The children in both groups were mostly in the 10-year-old age group. The number of 9-year-old students in the Turkish group was higher than the British group because elementary school education consists of four grades in Turkey whereas elementary school education in England consists of six grades. The number of British students in the 11-year-old age group was higher than that of the Turkish students. Table 1 provides detailed information concerning the two samples.

Table 1
Basic demographic information concerning the Turkish and English samples

Sample	Gender	Year 9		Year 10		Year 11		Total	
		N	%	N	%	N	%	N	%
Turkish	Female	44	59.45	88	47.57	8	88.89	140	52.24
	Male	30	40.55	97	52.43	1	11.11	128	47.76
	Total	74	100	185	100	9	100	268	100
English	Female	23	65.71	82	52.56	31	48.44	136	53.33
	Male	12	34.29	74	47.44	33	51.56	119	46.67
	Total	35	100	156	100	64	100	255	100

2.2. Procedure and ethics

The data were collected over a period of two academic years. The study was conducted with children aged between 9 and 11 years in primary schools in Nottingham in England during the 2016-2017 academic year and with children of the same age group in primary schools in Ankara in Turkey the following year. After obtaining the approval of the ethics committees of the research team's university in both countries, the school administrators were contacted to establish a working schedule with the schools to collect the data. The final samples comprised 255 schoolchildren in the British sample group and 268 schoolchildren in the Turkish sample. The data were collected at the schools in rooms determined by the school administrators (e.g., library, study rooms, classrooms, etc.) with the help and support of teachers. In both sample groups, the researchers worked with groups of 7-10 students in order to be able to pay closer attention to the students and to minimize problems in data collection. Before data collection commenced, children were informed about the measurement tools (personal information form and SPSIC). A detailed explanation was provided in terms of what traditional games and videogames were along with examples. No prompts were provided for children's game preference of videogames and traditional games and children provided responses on a free recall basis. The videogames and traditional games children specified were categorized by cooperation of two researchers and in cases where researchers had disagreement while scoring, an experienced third researcher was consulted.

2.3. Measures

2.3.1. Personal Information Form

To obtain information concerning various demographic variables of the participants, a form was including asking about age, gender, class level, and socio-economic status. In addition, the form also included questions about how much time the children spent playing videogames and traditional games per day, how long they played these games, and which types of videogames and traditional games they played.

2.3.2. Social Problem Situations Inventory for Children

The social problem-solving skills of the children participating in the study were determined using the Social Problem Situations Inventory for Children (SPSIC; Yılmaz et al., 2021). The SPSIC comprises six dimensions (impulse control, communication, cooperation, social initiation, empathy, and emotion

regulation) each with a different social problem situation. Attention was paid to ensure that the presented social situations addressed children from both cultures (British and Turkish) and were situations that children may encounter in their daily lives. In addition, a sample social problem situation and its solutions were included to guide the children. Although, various stage models (i.e. four-stages model, five-stages model, or seven-stages model) regarding the social problem solving process has been identified (D'Zurilla & Goldfried, 1971; D'Zurilla & Nezu, 1990; Gick, 1986; Wallace et al., 2012), considering the age of participants, four basic problem-solving steps on which these models were comprised were followed in the SPSIC: (i) identifying the problem, (ii) generating the alternatives (solutions), (iii) making decisions (which are the best), and (iv) solution implementations or verification). However, since the best solution chosen by children could not be tested in the school setting, in the fourth stage, the participants were asked to explain why they thought this was the best solution. In this way, it was possible for coders to understand whether the best solution chosen by children was implementable or verifiable. Consequently, participants were asked to follow the four-step solution strategy (defining the problem, producing solutions, identifying the most effective solution and explaining the reason) to solve the problem scenarios. Each solution step was assessed on a score of 0-4 points by the coders depending on their quality. Therefore, the participants could score a maximum 16 points in a single problem scenario and 96 points in the entire inventory. Participants' answers regarding the solution steps were scored separately by two coders, and the average score was assigned as the participants' score. In cases where researchers had disagreement while scoring, an experienced third researcher was consulted and it was scored in line with the common view of all three researchers. Here is an example social situation;

"Imagine that you and most of your class are playing a game during the school break time. While playing this game, some of your friends make fun of you for making mistakes in the game. You now feel bad because of this. How do you solve this problem to stop others in your class making fun of you?" The participants are then asked (1) Can you identify the what the problem is here? (2) Can you write at least two solutions to this problem? (Please try to write more than two if you can). (3) Which of your solutions do you think is the best one? and (4) Why do you think this is the best solution?

2.3.2.1. Scoring System

Each stage of the social problem situations was scored independently, and sum of stage scores were assigned as social problem situation score. The total score obtained from six problem situations were assigned as participants' SPSIC score. A guideline was created to increase harmony between coders. The scoring criteria for each stage are as below:

Defining the problem: Each problem scenario had main and/or subsidiary problems. For example, considering the aforementioned problem scenario, there were two main problems (*making mistakes in the game and making fun of children who made mistakes in the game*) and one subsidiary problem (*feeling bad*) and 2 points were awarded for each main problem while 1 point was awarded for subsidiary problems.

Producing solutions: To create a standard scoring system for the solutions suggested by children, responses were scored together by both coders. After creating the scoring system, remaining data were scored independently by coders. Each solution was scored between 0.5 and 2 points, depending on their qualities. If the solution was inadequate or the stage was left blank, then no points were awarded.

Making decisions: Unlike the first two stages, the coders' personal evaluation abilities on which solution was the most functional came into play in this stage. While scoring, the coders took account of two important criteria. First, the quality of the solution (i.e., was the solution given by children the best way to solve the problem?). Second, the best solution was chosen among the many solutions suggested by the children. This was important because those children who chose the best solution where there were many solution suggestions were awarded higher points.

Explaining the reason: Children's reasons were assessed by coders and scored between 0 and 4 depending on their functionality and efficiency.

2.4. Inter-coder consistency

The participating children's (Turkish and British) responses to the social problem scenarios were coded by two different coders by training a second bilingual coder. Krippendorff's alpha (kalpha) coefficient

was tested for inter-coder consistency. Kalpha coefficient takes a value between -1 and +1 and $\alpha = 0$ means that there is no consistency between coders (Krippendorff, 2004). Kalpha coefficients ranged between .963 and .984 for Turkish sample and between .954 and .988 for British sample (Table 2). These results showed that there was a high agreement between the scoring of the coders for both sample groups (kalpha>.80).

Table 2
Intercoder Reliability Analysis Results for the Social Problem Situations

Problem Situations	Krippendorff's Alpha (KALPHA)		%95 Confidence Interval Lower – Upper Limits		Number of Coders
	Turkish Sample	British Sample	Turkish Sample	British Sample	
SP 1	.963	.954	.930 - .984	.938 - .968	2
SP 2	.970	.958	.959 - .980	.947 - .969	
SP 3	.977	.981	.970 - .984	.973 - .987	
SP 4	.984	.978	.977 - .989	.970 - .984	
SP 5	.972	.988	.963 - .980	.981 - .993	
SP 6	.981	.985	.975 - .987	.979 - .991	

3. Results

3.1. Time spent on videogames and traditional games

The results showed that, on average, British children time spent significantly more daily time playing videogames than Turkish children (χ^2=42.19, p<0.001). Among Turkish children, only 6% had never played videogames. Over two-thirds played videogames for an average of up to two hours a day (70.2%), and the remainder (23.8%) played them for two or more hours per day. Among British children, only 5.9% had never played videogames. Just under a half played videogames for up to two hours on average per day (48.2%), and the remainder (45.9%) played them for two or more hours per day. Among the whole sample, about two-thirds played videogames for an average of up to two hours a day (65.2%).

Turkish children spent significantly more time playing traditional games than British children (χ^2=13.67, p<0.05). Just over half of Turkish children reported that they played traditional games for an average of two or more hours per day (54.1%), while under half of British children reported doing so (43.7%). Among whole sample, slightly more than half of children played traditional games for an average of up to two hours (51%) whereas just less than three-quarters of them played for an average up to three hours per day (73.6%).

3.2. Gender and age differences

Analyses indicated that the boys in both the Turkish sample (χ^2=54.79, p<0.001) and British sample (χ^2=32.87, p<0.001) spent significantly more time playing videogames than girls. Also, the Turkish boys played traditional games significantly more than the girls on a daily basis (χ^2=15.20, p<0.05), while no significant difference was found among the British children (χ^2=6.95, p>0.05). Furthermore, neither Turkish (χ^2=2.27, p>0.05) nor British children's (χ^2=4.71, p>0.05) average daily time spent playing videogames differed significantly by age. Additionally, children's average daily time spent playing traditional games did not differ according to their age (Turkish: χ^2=6.87, p>0.05; British: χ^2=6.25, p>0.05).

3.3. Social problem-solving skills

Among the whole sample, girls' SPSIC scores were significantly higher than boys' SPSIC scores ($t_{(521)}$=4.09, p<0.001). Among the Turkish sample, girls' SPSIC scores were also significantly higher than the boys' scores [$t_{(266)}$=4.15, p<0.001], but no significant difference was found between SPSIC scores for British girls and boys [$t_{(253)}$=1.63, p>0.05]. Children's SPSIC scores who played videogames up to one hour per day (M=59.67) were significantly higher than those scores (M=55.00) who played

an average of four hours or more per day ($F_{(4,518)}$=2.760, p<0.05). Table 3 provides detailed data regarding the analyses conducted.

Table 3
The Social Problem Situation Inventory scores of the sample groups with respect to the variables

Variables		Sample	N	M	SD	*t*	*F*	*p*
Gender	Girls	Turkish	140	62.13	11.75	4.15		**<.001**
	Boys		128	56.19	11.62			
	Girls	English	136	55.55	11.01	1.63		.104
	Boys		119	56.20	11.91			
	Girls	Total	276	60,36	11,51	4.09		**<.001**
	Boys		247	56.19	11.73			
Age	9	Turkish	74	56.69	10.57		2.423	.091
	10		186	60.32	12.53			
	11		8	59.50	10.60			
	9	English	35	57.66	12.15		.504	.604
	10		156	56.92	11.92			
	11		64	58.62	9.98			
	9	Total	109	58.13	10,30		.040	.961
	10		341	58,43	12,33			
	11		73	58.59	11.41			
Daily time spent on videogames (minutes)	0-59[a]	Total	206	59.67	12.09		2.760	**.027** (a –b)
	60-119		136	59.27	11.22			
	120-179		83	59.11	10.45			
	180-239		46	58.10	9.85			
	240 and more[b]		52	55.00	13.05			
Daily time spent on non-videogames (minutes)	0-59	Total	116	56.92	12.23		.722	.577
	60-119		149	58.09	12.00			
	120-179		118	58.20	11.94			
	180-239		60	58.65	11.45			
	240 and more		80	59.34	10.85			

[a]*represents the children who spent up to an hour a day playing videogames,*
[b]*represents the children who spent four hours or more a day playing videogames*

3.4. Preferred videogame genres

Turkish children indicated that their most preferred videogame genres were action games (47.8%), and role-playing games (39.2%), and their least preferred videogame genres were simulation games (15.7%) and puzzle games (16.8%). Similarly, British children most preferred videogame genres were action games (65.5), role-playing games (61.6%) and sports games (51%), and least preferred were simulation games (13.3%) and puzzle games (8.6%).

3.5. Gender and videogame preferences

Turkish boys mostly preferred playing action (71.9%) and role-playing (51.6%), and action-adventure (37.5%) videogames, while British boys mostly preferred action (75.6%), sports (71.4%), and role-playing (65.5%) videogames. Additionally, action (45%), casual (44.3%), and role-playing (27.9%) videogames were mostly preferred by Turkish girls while British girls mostly preferred role-playing (58.1%), action (56.6%), and action-adventure (34.6%) videogames.

3.6. Traditional games

The traditional game types preferred most by British children were sports games (50%), strategy-intelligence games (15%) and action games (9%), while game types preferred most by Turkish children were action games (45%), sports games (24%) and rope games (7%). Fighting, racing, and *Lego*-puzzle games were found to be the traditional type games least preferred by both sample groups. In terms of gender, Turkish boys mostly preferred traditional games involving action (77.3%) and sports (73.4%), while the majority of British boys (83.2%) reported that they played sports games. Board games (27.7%) were the second most preferred game type for the British boys. Action games (87.1%), sports games (44.3%), and role-playing games (35.7%) were the most preferred game types for Turkish girls, while sports games (80.9%), board games (36.8%) and action games (36%) were the most preferred games for British girls.

3.7. Social problem-solving skills and game preference

Multiple regression analysis showed that children's SPSIC scores had significant relationships with the videogame genres they preferred by scenarios (R=.293, p<.001), primary production purposes (R=.222, p<.001), and traditional game genres (R=.344, p<.001). According to the standardized regression coefficients (Table 4), the SPSIC scores of the children were negatively predicted by action-adventure videogames (β= -.191, SE=.732, p<.001) and positively by simulation videogames (β=.153, SE=1.115, p<.001) and puzzle videogames (β=.114, SE=1.257, p<.01). In addition, the videogame genres whose primary production purposes were serious (β=.145, SE=1.170, p<.001) and educational (β=.126, SE=1.180, p<.001) predicted the children's SPSIC scores significantly and positively. Moreover, the traditional game genres of action games (β=.236, SE=.388, p<.001), strategy-intelligent games (β=.173, SE=.569, p<.001), role-playing games (β=.148, SE=.891, p<.01), and sports games (β=.135, SE=.326, p<.01) also predicted children's SPSIC scores significantly and positively.

Table 4.

Multiple regression analysis results regarding the prediction of social problem-solving scores with respect to the game types

	Variables	B	SE_B	β	*t*	R	R^2	*F*	*p*
Videogame genres by scenarios	**1.** (Constant)	57.591	.934		61.640	0.278	0.078	4.792	**.000**
	2. Action	.750	.451	.078	1.663				
	3. Action-Adventure	-2.938	.732	-.191***	-4.015				
	4. Role-playing	-.446	.663	-.030	-.672				
	5. Simulation	3.923	1.115	.153***	3.519				
	6. Strategy	1.404	.953	.064	1.474				
	7. Racing/driving	-.243	.955	-.011	-.254				
	8. Sport	.679	.730	.043	.930				
	9. Puzzle	3.291	1.257	.114**	2.618				
Videogame genres by primary production purpose	**1.** (Constant)	58.033	.804		72.164	0.222	0.049	5.344	**.000**
	2. Entertainment	-.319	.225	-.061	-1.417				
	3. Educational	3.421	1.180	.126***	2.899				
	4. Serious	3.898	1.170	.145***	3.331				
Traditional game genres	**1.** (Constant)	52.220	1.047		49.877	0.344	0.118	6.873	**.000**
	2. Role-playing	3.091	.891	.148**	3.470				
	3. Sport	1.018	.326	.135**	3.125				
	4. Race	2.143	1.926	.047	1.113				
	5. Rope	2.104	1.125	.080	1.871				
	6. Action	2.047	.388	.236***	5.272				
	7. Fight	-1.753	1.367	-.054	-1.283				
	8. Puzzle	1.798	1.379	.056	1.304				
	9. Strategy-Intelligent	2.246	.569	.173***	3.950				
	10. Board	-1.726	1.242	-.060	-1.390				

***p<0.05; **p<0.01; ***p<0.001**

4. Discussion

The problems which are frequently encountered in daily life, have multiple solutions and require the integration of various components for solution, and are defined as "social problems" (Jonassen, 1997; Reed, 2016). In the literature, there have been many studies carried out to determine the influence of videogames on children's problem-solving skills (Dindar, 2018; Goldsworthy et al., 2000; Kang et al., 2017; Kim et al., 2009; Sanchez et al., 2009; Sun et al., 2011; Van De Sande et al., 2015). When these studies were examined, it was seen that almost all of the games used were either specially developed by the researchers or derived from existing games. However, it is still unclear what kind of association there is between the types of videogames that children prefer to play in their daily lives and their social-problem solving skills. In addition, since the related studies generally focus on videogames and the studies on traditional games are few (e.g., Li et al., 2016; Petty & de Souza, 2012; Piscalkiene, 2009), the present study also examined the relationship between the traditional games played by children and their social problem-solving skills.

The findings demonstrated that British children time spent significantly more daily time playing videogames more than Turkish children. About one-quarter of the Turkish children participating in the study played videogames for an average of two hours or more per day (23.8%), while about half of the British children did so (45.9%). Studies conducted in different countries and show that time spent on videogames may vary by culture and it is not possible to talk about a standard unit of time spent playing daily. For instance, Forde and Hussey (2015) reported that 15% of Irish children (M_{age}=12.1 years) had never played videogames while only 9% of played videogames for more than two hours per day on average. In a study conducted with Dutch children (M_{age}=11.5 years), Van Schie and Wiegman (1997) reported that only 3% played videogames more than two hours per day. Kovess-Masfety et al. (2016) reported that children from different European countries (Germany, Netherlands, Lithuania, Romania, Bulgaria, and Turkey, M_{age}=8.7 years) only 0.69% of children spent more than 20 hours a week playing videogames and that 4.32% played videgames10-20 hours a week. These findings show that it would be more beneficial to focus on different variables that may affect the children's time spent on videogames.

Variables that have been shown to influence the amount of time spent playing videogames include the importance of intermittent rewards where individuals keep playing videogames with the hope that next reward is imminent (Griffiths & Wood, 2000; King & Delfabbro, 2009), a high degree of realism (Wood et al., 2004), parental socio-economic status (Livingstone & Helsper, 2008), age (Lemola et al., 2011; Smohai et al., 2017) and the genre of videogames (Charlton & Danforth, 2007; Griffiths & Nuyens, 2017; Johnson et al., 2016; Ng & Wiemer-Hasting, 2005; Triberti et al., 2018). Other variables that can influence the amount of time played may be genre-specific such as the story-telling narratives that encourage prolonged exploration or opportunities for social interaction in massively multiplayer online games. Przybylski et al. (2010) noted that for videogame engagement, the importance of psychological need satisfaction including competency needs, autonomy needs, relatedness needs, and mastery of control needs.

In both samples (Turkish and British), boys spent significantly more time playing videogames than girls. These results were in line with the findings obtained from studies conducted around the world. For instance, Gómez-Gonzalvo et al. (2020) found that Spanish male adolescents devoted more time to playing videogames than female adolescents. Yılmaz et al. (2017), in a study conducted with Turkish children aged 9-12 years old, reported that videogame addiction among boys was significantly higher than among girls. Similarly, Hawi et al. (2019) found that Lebanese boys' level of digital addiction (including videogames) was significantly higher than girls. In a study of Dutch adolescents, boys' average weekly time spent playing videogames and gaming addiction level was significantly higher than those of girls (Lemmens et al., 2011). All these results show that videogame playing intensity by gender appears to be consistent across cultures.

Turkish and British children's average daily time spent on both videogames and traditional games was not significantly differentiated by age. Similarly, Mullan (2018) reported no significant difference between children aged 8-11 years and 12-15 years in time spent playing videogames. Furthermore, studies conducted across a wider age range also report that time spent playing videogames was not differentiated by age. For example, in a study conducted by Johnson et al., (2016) by recruiting participants across a wide age range (13 to 54 years, M_{age}=20.73 years), it was reported that the participants' hours of videogame play were not significantly predicted by age. Another study conducted across a wide age range (12 to 63 years, M_{age}=21.73 years) also reported no significant association between age and time spent playing videogames (Chamarro et al., 2020). The fact that there are many types of videogames that are appealing not only to children and adolescents but also to young adults and older adults (Chamarro et al., 2020; Staiano & Flynn, 2014) may have been a possible reason for the results in the present study. Although, the present authors are not aware of any study specifically investigating the relationship between the time spent playing traditional games and age, it is possible that the time allocated to playing traditional games decreases with age (i.e., from childhood to adulthood) although increases in the playing of traditional games in adulthood may occur when adults have children of their own and use the playing of traditional games to form emotional bonds with their offspring.

In the Turkish sample, girls' SPSIC scores were found significantly higher than boys' scores. However, the SPSIC scores did not differ significantly in the British sample with respect to gender. Previous studies show that there are no consistent findings regarding this issue. Eschenbeck et al. (2007)

and Walker et al. (2002) reported that girls had higher problem-solving scores than boys while, no significant relationship between gender and social problem-solving skill was found in other studies (e.g., Azam & Aftab, 2012; Dereli-Iman, 2013). In addition, Wüstenberg et al. (2014) found that German and Hungarian adolescents' scores for complex problem-solving skills did not differ in terms of gender both within the group (male vs. female) and between groups (German vs. Hungarian). Therefore, it is not possible to say that a particular gender group (boy or girl) in different age groups (ranging from pre-school to adolescents) has an obvious social problem-solving skill superiority. Studies focusing on variables other than gender and age that may affect children's social problem-solving skills have been conducted. For example, the skill of behavioral adjustment (Denham & Almeida, 1987), the school setting, school program, and the quality of interactions with teachers (Battistich et al., 1989; Holloway & Reichhart-Erickson, 1988) are all variables that have been reported as affecting children's social problem-solving skills. However, contemporary studies are needed to examine whether the new world parameters (particularly technology-related) affect children's social problem-solving skills, and if so, to what extent.

Action videogames and role-playing videogames were the most preferred genres by Turkish and British children whereas simulation videogames and puzzle videogames were the least preferred. In terms of gender, Turkish and British boys stated that they mostly preferred playing action videogames and role-playing videogames. Furthermore, British boys also liked playing sports videogames. Similarly, action videogames and role-playing videogames were also mostly preferred by Turkish and British girls. Additionally, casual videogames were the second most preferred videogames among Turkish girls. These results suggest that the videogame playing preferences of boys and girls in both cultures (Turkish and British) are similar and that children prefer to play similar videogame genres irrespective of culture. Studies conducted in different cultures with similar age groups have reported similar results. For instance, Mazurek and Engelhardt (2013), who examined the videogame preferences of boys only (M_{age}=11.7 years), found that they mostly preferred action and sports videogame genres. In another study examining the videogame preferences of Taiwanese children, it was found that male students mostly preferred to play role-playing, strategy, action, and sports videogames, while female students preferred videogame genres such as puzzle, action, role-playing, and strategy videogames (Chou & Tsai, 2007).

The regression analysis found that action-adventure videogames were a negative predictor of children's social problem-solving scores, whereas simulation and puzzle videogames were positive predictors. In addition, videogames whose primary production purpose was serious and educational were also positive predictors of children's SPSIC scores. Studies conducted with children similarly found that simulation videogames whose primary production purpose was serious (Goldsworthy et al., 2000; Liu et al., 2016; Monjelat et al., 2012) and primary production purpose was educational (Jong et al, 2010; Sung & Hwang, 2018; Yang 2012, 2015) were effective in promoting their social problem-solving skills. Furthermore, Sun et al. (2011) also found that playing puzzle videogame (*Professor Sudoku*) encouraged the development of children's problem-solving strategies. Given the findings that the videogames primarily produced for education or serious appeared to be effective in promoting children's social problem-solving skills, it would be beneficial to use these games not only for education and knowledge acquisition but also in the development of social problem-solving skills in school settings. Furthermore, these games may also be beneficial for parents. Encouraging children to utilize these games out of school time would likely help them develop social skills and learn while having fun.

In the present study, the amount of time that Turkish children played traditional games on daily basis (54.1%) was significantly higher than that of the British children (43.7%). Games such as action, strategy-intelligent, role-playing, and sports positively predicted the social problem-solving scores among Turkish and British children. Similarly, Durualp and Aral (2010) found that traditional game-based social skills training, which included action and strategy games, developed children's social problem-solving skills. In an Iranian study, Akbari et al. (2009) reported that movement-based traditional game programs were more effective than daily life activities in developing children's (aged 7-9 years) fundamental skills which, in turn, were important in developing their social problem-solving skills. Based on these findings, it appears important for teachers and parents to encourage their children

to engage in playing traditional games in which they can be physically active (through sports, mission games) and mentally active (through strategy, role-playing games) in terms of their skill education.

4.1. Strengths and limitations

The present study has some limitations that should be mentioned. First, the data obtained in relation to the game preferences of the children participating in the study were based on a single source (i.e., student self-report statements). In this respect, the relatively large number of the participants (n=523) makes it impossible to verify the games preferred by the children by observing them simultaneously or by asking their parents. However, more than one source can be used in studies that allow such alternative data verification methods (interviewing parents or other family members, doing observations, etc.). Second, gender and age factors were regarded as variables that may affect children's game preferences or social problem-solving skills but many more factors are likely to have influenced game choice. Nearly half of participants (42.7%) were unable to provide data regarding their parents' levels of education or family income. Due to children's' age, they may not be fully aware of such demographics of their families. Therefore, these two variables could not be taken into account during the analysis. These factors could be taken into account in future studies to be carried out with older age groups. Third, the study examined the extent to which and in which direction (positive-negative) the types of games played by children predicted their social problem-solving skills. Although the data obtained allow predicting a positive or negative effect of game types on children's social problem-solving skill scores (Tabachnick & Fidell, 2007), a direct effect cannot be determined as this was not an experimental or longitudinal study. It is thought that comparison of the data obtained in this study with the data obtained as a result of other such types of study could be beneficial for confirming the findings obtained here.

In addition, the study's strengths should also be mentioned. First, this study was conducted in two different cultures (Turkish and British). This allowed the researchers to make cultural comparison such as if the game (video and traditional) preferences of children differed according to culture they live in or the average daily time they spent playing these games. Second, many of the traditional games and videogames that children prefer in their daily lives were included in this study. Consequently, the association between many types of games (video – traditional) and children's social problem-solving skills were examined in a way that had not been carried out previously.

5. Conclusion and Future Research

Exploring the association of just a single videogame or a traditional game on children's social problem-solving skills may result in other games preferred by children being ignored. In the present study, the purpose was to fill this gap in literature by investigating the extent to which videogames and traditional games preferred by children from different cultures in their daily lives were predictors their social problem-solving skills. The results showed that, in both cultures (Turkish and British), boys spent more time playing videogames and that children who played videogames up to one hour per day had higher SPSIC score than those scores who played four or more hours of videogames daily. Action videogames and role-playing videogames were the most preferred game genres by children in both cultures, while simulation and puzzle videogame genres were the least preferred. In terms of gender, unlike Turkish boys, British boys highly preferred sport videogames and Turkish girls, unlike British girls, preferred casual videogames. In both sample groups, children preferred traditional games such as sports games and action games. This result is not unexpected given the nature of children. The playing of action-adventure videogames was a negative predictor of SPSIC skills among children, while videogames whose primary production purpose was educational or serious were positive predictors of SPSIC scores. However, children least preferred educational or serious types of videogames and suggests they should be directed more towards such types of videogames. In addition, it was found that traditional games based on role-playing and strategy-intelligent and that keep kids active were positive predictors of SPSIC scores.

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Highlights

- British children played videogames more than Turkish children.
- Boys in both samples spent more time playing videogames than girls.
- Action and role-playing videogames were the most preferred genres by children.
- Serious and educational videogame genres were positive predictors of SPSIC.
- Action-adventure, and strategy traditional games were positive predictors of SPSIC.