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Abstract

Children learn so many things (rules, science, mathematics, etc.) by the help of the games. Chess is also an enjoyable game for most children. The chess grandmaster Karpov stated that chess is everything – art, science, and sport. However, this raises the questions concerning how children evaluate chess and whether chess reflects the child's inner worlds? The purpose of this study is to investigate how children evaluate chess, to understand children's inner world via chess and also examine the children's chess analogies. The study was carried out with 87 six year old children (42 girls and 45 boys), from a public preschool in Ankara, during the spring of 2015-2016 academic year. The Children's Chess Questionnaire used as the data collection instrument in this study. A descriptive analysis method was used to classify the children's responses. The findings show that children have positive attitudes to chess and chess reflects their inherent desire to win. This is a product of the ego just because the ego always tries to protect the organism from all kind of harmful effects, especially internal effects. Furthermore, children are able to make various analogies between chess and real life.

Introduction

Play has vital and critical impacts on children's development. Milteer and Gingsburg (2012) list benefits of the play such as developing creativity, imagination power and developing physical, cognitive, and emotional strengths. Evaldsson and Corsaro (1998) demonstrated in their research how children in the production of play and games simultaneously use, refine and develop a wide range of communicative skills, collectively participate in and extend their peer cultures. Furthermore, play has a very special and extensive place in a child's world. According to Schillemans and Van Gils (2001) play is predominantly seen as an activity which helps children to become adult and thus play is an essential characteristic of children. Pellegrini and Smith (1998) state that between nearly all children spend their time and energy is in play. According to Piaget (1975) play is the way that children explore the world and helps children expand their experience, knowledge and understanding of new things. Also, Bulotsky- Shearer, Domínguez, Bell, Rouse and Fantuzzo (2010) reported that children can more easily improve some social and academic skills during play.

The terms "play" and "game" are important since in some cultures they are similar meanings. For instance, the Turkish word "oyun" is used to represent the concepts of "play" and "game". This can cause confusion in determining the difference between the play and game. Smith and Pellegrini (2008: 1) define the terms play and game as follows:

> Play is often defined as activity done for its own sake, characterized by means rather than ends (the process is more important than any end point or goal), flexibility (objects are put in new combinations or roles are acted out in new ways), and positive affect (children often smile, laugh, and say they enjoy it). These criteria contrast play with exploration (focused investigation as a child gets more familiar with a new toy or environment, that may then lead into play), work (which has a definite goal), and games (more organized activities in which there is some goal, typically winning the game). Developmentally, games with rules tend to be common after about 6 years of age, whereas play is very frequent for 2 to 6year-olds.

Games like play are powerful teaching tools. The theory of human problem solving, developed by Newell and Simon (1972) was based on games. Puzzles were chosen as an instrument for determining the level of analytical thinking and problem solving skills in this theory. Chess is not only an exciting game but simulates real life in that the moves an individual makes can change their life. Seymour and Norwood (1993) stated that chess is a

particularly effective teaching tool in terms of children learning the importance of planning and consequences of decisions. Several works (Dauvergne, 2000; Frank, 1974; Ferguson, 1995; Marguiles, 1998) have demonstrated the connection between chess and problem solving strategies, critical thinking, academic achievement, creativity and other cognitive skills.

Sala and Gobet (2016) stated that playing chess has positive effects on cognitive skills and academic success. Children, who know playing chess, are more successful in conceptual development than children who do not know playing chess (Sigirtmac, 2012). Working memory training, problem solving, evaluation of choices and obey the rules are some positive effects of chess (Gobet & Campitelli, 2002). Besides, chess is considered an effective educational tool able to improve mathematical skills, also other academic skills such as reading and general cognitive abilities such as concentration and intelligence, and even children's heuristics and habits of mind (Costa & Kallick, 2009). Moreover, many children have some problems about the transfer of learning process. Transfer of learning can be thought as a bridge from theoretically to practically (Mestre, 2005). There is found that chess is a strong tool for accruing in learning transfer process. According to Sala and Gobet (2016) chess intervention studies have focused on the academic and cognitive skills of children rather than adults: Children's skills are less context-specific than adults', and thus transfer of learning is more likely in the former than in the latter. This result shows consistency of Bart's (2014) findings that chess has significant effects on academic achievement. Bart (2014) claim that since chess is a demanding task involving focused attention and problem solving; playing chess should strengthen these cognitive abilities and thus be beneficial for children's school performance. Chess supply the facilities for developing of mathematical and reading skills and also cognitive abilities (Sala & Gobet, 2016). Another important and current results show that chess training improve Pisa scores in Mathematics (Trinchero & Sala, 2016).

In many countries including; Russia, Venezuela and Iceland; chess is part of the curriculum in all public schools (Linder, 1990). For instance, the head of a math department in a California school, reported that "*55% of students showed significant improvement in academic performance after chess instruction course*" (Palm, 1990). In the USA the under the heading "*Chess Makes Kids Smart*" the Chess Federation have supported many chess projects. These projects can offer benefits to 21st century learners (Graham, 1985). In Turkey there is an interest in chess and awareness of the positive effects on a child's development. However, there is less information about children's attitude to chess and whether the game reflects their inner world? Thus, this study investigated how a group of children playing chess feel and think about this game and how they make an analogy between chess and the life.

The Purpose and the Importance of the Study

The purpose of this study is to investigate how children evaluate chess and to use children's attitudes towards chess to understand their inner world. Furthermore, analysing the children's analogies between the chess and daily life. The results of this study will be important to understanding the children's inner worlds by the help of chess. Moreover, educators and researchers can find chance to use chess as an identification instruments for learning children's inner world.

Methodology

Sample

The study was carried out with a total of 87 six year old children from two public preschools in Ankara, during the spring of 2015-2016 academic years. The sample consisted of 42 girls and 45 boys. The reason of choice at this age group was; according to Smith and Pellegrini (2008) developmentally, games with rules tend to be common about six years of age. Also this aged group had taken a chess course regularly as a part of school curriculum. All children in study know the basic rules of chess and attend the chess course in the school.

Material

The Children's Chess Questionnaire (see Appendix 1) was used as a data collecting instrument. First version of the questionnaire was evaluated by a chess teacher, a psychologist and child development specialist. A pilot study was carried out with 60 children at six years old, from a public preschool and some of the questions were modified according to the children's responses. The Children's Chess Questionnaire (CCQ) contains a total of

14 questions which assess different aspects of the child's attitude to chess (Güneş, Öz & Tuğrul, 2012). CCQ is update and gain new form of in this study (Questions showed Q1, Q2, Q3… Q10). It contains nine questions for determining the child's emotions/ feelings about chess are elicited in questions Q1, Q2, Q3; Q4 is concerned with the child's thoughts, opinions and knowledge about chess; Q5, Q6, Q7 and Q8 aim to assess the child's moral development and desire to win; finally Q9 asks the child to compare the game of chess to their own life.

Procedure

Researchers applied questionnaire to every child individually to preclude the children being affected by the views of other children. Researchers wrote the children's responses on the questionnaire as they were given. The duration of the administration of the questionnaire was 10 - 15 minutes for each participant. Permission was obtained from by the management of the preschool to undertake the research and also before the application process children's families were informed by letter. On completion of the research the results were given to class teachers and the results were added to the children's portfolios.

Design and Analysis Method

The qualitative technique used as the research model. Qualitative research relies mostly on non-numeric data, such as interviews and observations. However, coding method is used in qualitative technique. Coding technique supplies the numeric value and in this research descriptive analysis method was used to classify the children's responses (coding for CCQ). Descriptive analysis refers to statistically describing, aggregating, and presenting the constructs of interest or associations between these constructs (Bhattacherjee, 2012). A comparative analysis method was used to determine the relationship between questions 1 and 2, and questions 3, 7and 8.

Findings and Discussion

Research results are presented in the four parts according to structure of the questionnaire.

Descriptive Analyses of the Children's Chess Questionnaire

The responses and analyses results presented in four basic parts:

1. Emotions/ feelings about chess (Q1, Q2, Q3; also the comparison of Q1 and Q2)
2. Thoughts/ opinions/ knowledge about chess(Q4)
3. Moral development and inherently desire to win of the children reflected by chess (Q5, Q6, Q7, Q8 and also the comparison of questions 3, 7 and 8)
4. Analogies between chess or playing chess and daily life (Q9)

The children's thoughts and opinions about chess and their knowledge of the game were obtained from the Children's Chess questionnaire. The statistical data relating to six questions (1, 2 and 3) are presented separately for each question.

Findings of Children's Emotions/Feelings about Chess

Q1. Choose activities you would like to do

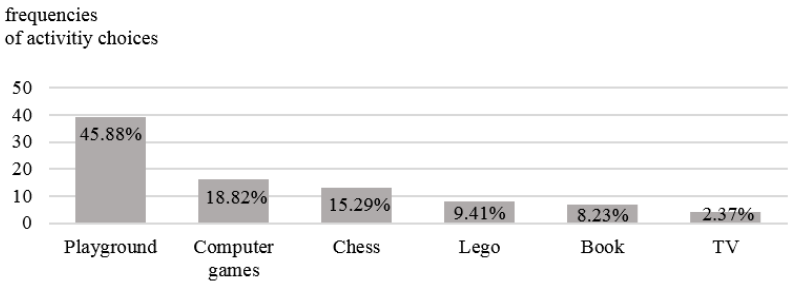

Figure 1. Frequency and percentage of chosen activities

Figure1 shows that nearly half of children choose the playground activities. The rate of children who choose the computer games is almost one in five. Choosing chess activity is in third place among other alternatives. It can be said that children do not prefer TV and book comparing the other activities.

According to Waller, Sandseter, Wyver, Arleam- Hagser and Maynard (2010) children want to spend their time commonly in outside and they want to play in outside, also there is relationship between the outdoor activities and children's learning/ teaching process, children's health and social behaviours in early childhood education and care. It can be thought that this framework can be explained the child's other activity choice (outdoor activities) in the current study.

Q2. How do you feel when you play chess?

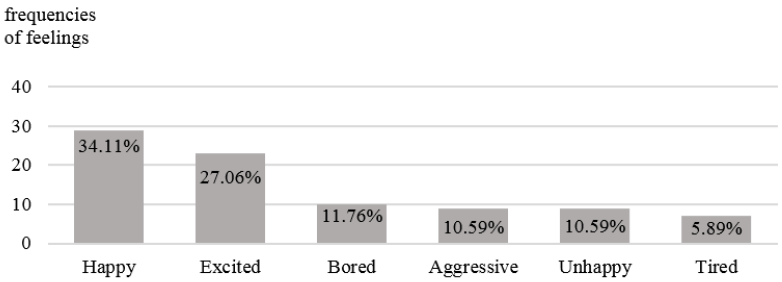

Figure 2. Frequency and percentage of children's feelings when they play chess

Being bored, aggressive, unhappy, and tired responses are considered to be negative feelings and Figure 2 shows that 40% of the children have negative feelings about chess. On the other hand, nearly one of the three children are happy and higher than 25% of children are excited when they play chess. In the analysis it was realized that children who have negative feelings when they play chess (question 2; Q2); most of them want to play similar games or do similar activities (question 1; Q1). In this section, the relationship between Q 1 and 2 is examined to understand which games or activities were chosen by children who have negative feelings toward chess. Children who have negative feelings toward to chess and their activity choices is given Table 1 and activity choices distributions of children who have negative feelings toward to the chess is represented in Figure 3.

Table 1. The games and activities choices of children who have negative feelings towards chess

Q2. How do you feel when you play chess?	Feelings	Q1. Choose activities you would like to do
11 children	bored	play in playground (6) play computer games (5)
9 children	unhappy	play in playground (5) play computer games (2) read book (2)
6 children	angry	play in playground (3) play computer games (3)
5 children	tired	play in playground (3) play computer games (2)

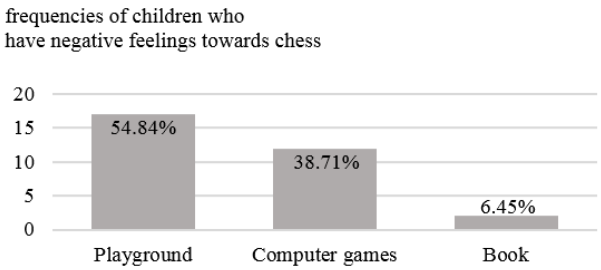

Figure 3. Activity choices distributions of children who have negative feelings toward to the chess

According to Table 1 and Figure 3; children who have negative feelings when they play chess, mostly choose similar activities with playing the playground (17 children) and playing computer games (12 children) being the most preferred only two child prefers to read book as an activity. A total of 31 children have negative feelings about chess, more than half of them choose the playground and the others choose the computer games.

Q3. What makes you happy when you play chess? Why does this make you happy?

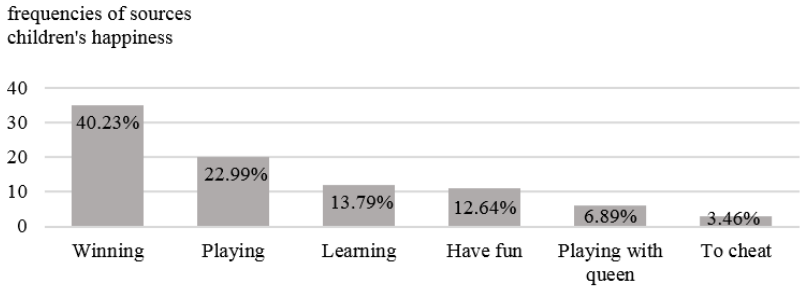

Figure 4. The sources of children's happiness when they play chess

It is understood from Figure 4, more than 40% children will be happy if they win the game however, almost 23% children are happy just *"playing"* chess. It is also noteworthy that nearly 14% children said that they were *"learning"* and *"have a fun"* in the game. Moreover, 10% of children who said *"playing with queen"* and "to cheat" makes me happy in chess, because they claimed the reason that these (playing with queen and cheating) enabled to them to win the match. Also they stated that they do not want to lose the match. This results show that 10% of the children are also happy when they win the game. The total of "directly winning" and "things that help to win the game" is almost 50% (40%+10%). Children in this sample thought that chess help them learn new things and a good activity that enable them to have fun. This finding is supported the idea that chess serves as a bridge that can bring all children together in an activity they can all enjoy (McDonald, 2006).

Findings of children's thoughts/ opinions/ knowledge about chess

In this section the resultsof Q4 given in Table 2.

Table 2. Q4 children's general opinions about chess

	Yes		No	
Playing chess is:	f	%	f	%
Funny	53	60.92	34	33.08
Complex	48	55.17	39	44.83
Important	51	58.62	36	41.38
Agree or disagree?	Agree		Disagree	
A person who plays chess is clever	52	59.77	35	40.23
Chess is an requires intelligence	60	68.96	27	31.04
Chess is a logical activity	65	74.71	22	25.29

According to the Table 2, most of the children think that chess is a funny (60%) and important game (59%). On the other hand, almost 55% children think that chess is a complex game. Furthermore, nearly 70% children claim that chess requires intelligence and that chess is logical activity (almost 75%). Similarly, 60% children consider that person who plays chess is clever.

More than half of children think that chess contributes to development of their brain which is in keeping with the research by Ferguson (1995) that emphasises the effects of chess on the development of the brain, analytic thinking and problem solving skills. Also, the findings of the current study are similar to the opinions of the chess master Meyer who classifies the benefits of chess for children; in focusing, visualizing, thinking ahead, weighing options, analysing concretely, thinking abstractly, planning, and juggling multiple considerations simultaneously (McDonald, 2006).

Findings of moral development and inherent desire to win of the children reflected by chess

In this chapter the analysis of Q5, Q6, Q7, Q8, and Q9 are given.

Q5. What would happen if these rules did not exist?

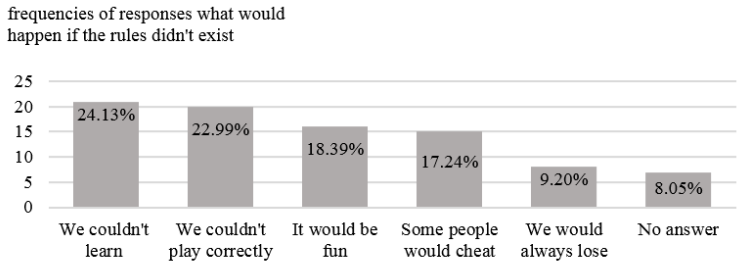

Figure 5. Children's responses about changing chess rules

It is understood from Figure 5 that more than half of children consider that rules are necessary for learning and playing chess. Moreover, 17% children think that rules protect the game and prevent cheating. Findings show that, generally, children strictly adhere to the rules. Less than one in five children think about that chess would be fun if rules did not exist.

Q6. Do you want to change the rules of chess? Why or why not?

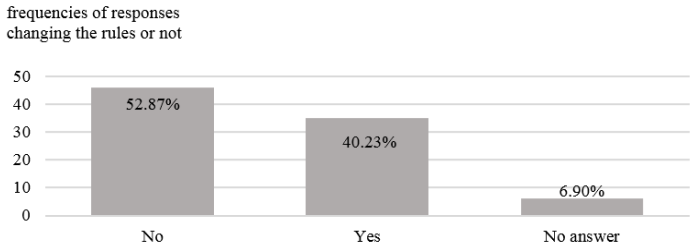

Figure 6. Changing the rules of chess

Table 3. The reasons of children about changing or not changing the chess rules

	No change		Change	
	f	%	f	%
It would be complicated	13	16.04		
Rules are necessary	12	14.81		
Adults would be angry with us	11	13.58		
We could not play	10	12.35		
It would be easier			19	23.46
It would be funnier			11	13.58
For winning			5	6.18

It can be understood from Figure 6 and Table 3 the children generally think that chess rules are necessary. These rules enable them to play. More than half of children depend the rules and do not want to change the rules. In this group nearly 30% children accepted that rules are necessary and they make chess understandable, with the help of the rules the chess is not complicated game. Almost 14% of the children said that adults (teachers, family or other people) would be angry if they broke the rules. On the other hand nearly half of children who

want to change the rules, they claim that it would be easier and funnier if the rules did change. Because they believe that rules restricted them in the game.

Many children think that the rules of chess allow them to learn and play the game and also protect the game. Piaget (1975) and Kohlberg (1980) discussed these types of behaviours as part of the moral development children. According to Piaget a child's decision is made according to the perceived result of the action. Moreover, Kohlberg (1980) stated that children try to be good boy/ nice girl to meet expectations and to be accepted in their social environment. Moreover, Hännikäinen (2007) emphasized children most often expected to meet rules at school. In this study, many of the children do not want to change the rules. In the current study the children's responses, indicate that they care about the results of their actions and they try to strictly obey the agreed rules. These findings are supported the results were reported by Tisak (1986) stated that children believe that rule violations to parental authority to be unacceptable, may depend on the content of the social event (like to be accepted and not to be ostracized). Also, another findings which is "they would be angry with us if we change the rule" are consistent with the Tisak and Turiel (1983) finding that children trend to obey the rule for refraining the punished. Other children, who wanted to change the rules, generally want all pieces to be able to move in an unlimited and also repeal the touch move rule. Moreover, children trend to obey the rules and want to protect them may be evaluated a good gain because Bodrova (2008) emphasized that development of self-regulation in play becomes possible because of the inherent relationship that exists between roles children play and rules they need to follow when playing these roles.

Q7. Which chess pieces do you want to be? Why?

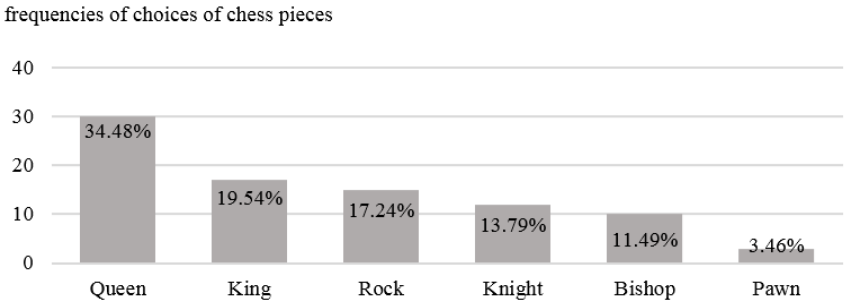

Figure 7. Choices of chess pieces

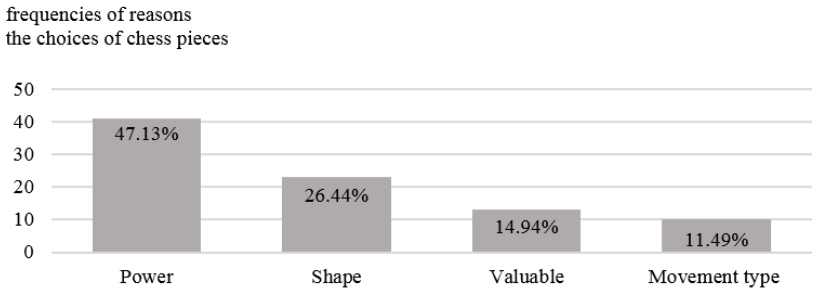

Figure 8. Reasons the choices of chess pieces

It is understood from Figure 7, more than one third of children chose the queen and nearly one of the fifth children want to be rock. Other children choose the knight and bishop because they like these animals (knight=horse, bishop=elephant) in real life. The queen has the most flexible moves and the most powerful piece in the game. Figure 8 show that powerful movement ability is the main reason of pieces choices (nearly half of children). Also shape (nearly 26%) and valuable of piece (nearly 15%) is another reason of choices. Movement type of piece has the least rate in all choices (nearly %12). It can be seen from children's responses, they want to be an advantageous position in the game. They choose the powerful pieces and wanted to win the game at the end of the match. The children's enthusiasm may be explained as the inherent desire to win.

Q8. Is it more important to play or win at chess? Why?

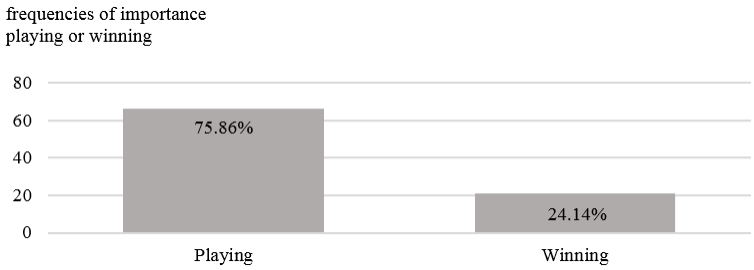

Figure 9. Children's attitudes to playing and winning at chess

Table 4. The reasons of children about the importance of playing or winning in chess

	Playing		Winning	
	f	%	f	%
Just a game	28	32.18		
We have fun	24	27.59		
Learn new things	8	9.20		
Maybe another day we will win	6	6.90		
To be happy			10	11.49
To win a prize			7	8.05
For my family/teacher happiness			4	4.59

It is understood from Figure 9, more than 75% children say that playing is more important than winning in chess. It can be seen from Table 4, children who think that playing is more important than winning, claim that "chess is a just game (nearly 32%)", "have a fun (28%)", "learn new things when they play chess (nearly 10%)" and "we will win another they (nearly 7%)". However, nearly one quarter children think that winning is important, want to be happy, want to win prize and they make their family or teacher happy to win the game.

The purpose of Q8 was to gain an understanding about children's thoughts about the real value of the games. From the analysis of this question, it appears that many of the children seem to understand the real value of the game. However, this was not consistent with the responses to Q3 "what makes you happy when you play chess?". When considering the responses to Q7, sometimes children made cements that were different from their inherent thoughts. In terms of understanding the children's inherent desire to win it was necessary to analyse the relationships between the responses to questions 3, 7 and 8 shown in Table 5.

Table 5. Responses to questions 3, 7 and 8

Q8. Playing or winning?		Q7. Chess pieces		Q3. What makes you happy in chess?	
Responses	f	Choice	f	Response	f
		Queen	24		
		King	12		
Playing is important	66	Rook	11	I want to win	47
		Knight	9	I want to play	17
		Bishop	8		
		Pawn	2		
		Queen	6		
		King	5		
Winning is important	21	Rock	4	I want to win	11
		Knight	3	I want to play	4
		Bishop	2		
		Pawn	1		

In Table 5 it can be seen that although almost 75% of the children specified that playing is important in chess (Q8), nearly 72% of the children in this group said that "winning" made them happy (Q3). Only 25% of the children in the same group said that they just wanted to just play (it makes me happy). In this group nearly 56% also wanted to be most powerful chess piece (queen and rock) and 33% of the children in this group wanted to be a king which is the most valuable piece. Similarly, in Q8; 24% of the children directly stated that winning was important in chess and half of the children in this group declared that winning made them happy. Furthermore, in this group almost half of this group choose the most powerful chess pieces (queen and rock).

All of these results show the children's inherent desire to win. This is a product of the ego just because the ego always tries to protect the organism from all kind of harmful effects, especially internal effects. Losing is a harmful effect that affects the organism internally. Thus, the ego creates the "desire to win", using instinct as an excuse. The reason for this can be interpreted in many ways. Baumeister, Dale and Sommer (2002) state that according to Freudian methodology; the ego defends itself against internal events, specifically those impulses that are regarded by the ego as unacceptable. Thus, losing is not easily accepted by the ego. So the response "winning makes me happy" given by the children who participated in this study, becomes reasonable and explains the desire to win.

However, the desire to win is not considered as a bad instinct and it is also believed that it can be controlled. According to Deutsch (1949) the desire to win requires competitive motivation which is realised in competitive behaviour, and this behaviour, defined as the pursuit of assets perceived to be scarce and contested, is ubiquitous. Competitive behaviour also can improve the motivation and create positive values; however, it can also have negative aspects such as a person applying unethical strategies or becoming deeply disappointed by the negative effects of competitive behaviours. For example, Garcia and Tor (2009) claimed that competitive behaviour and motivation sometimes harms not only one's adversary, but also oneself. In the current study some of the children gave evidence of their unethical behaviour when said that they wanted to cheat and the effect of losing on their motivation was illustrated by the statement that if they lost the game they would not want to play again.

Generally, games are based on competition however; it may cause some problems particularly, for children. In fact, games can be used as cooperative activities, and this may prevent the use of unethical strategies, eliminate the fear of losing and resulting disappointment. Malhotra (2010) states that desire to win can be controlled with the help of cooperative work and this cooperative approach supports the children's motivation and also enables them to learn together.

Findings of Analogies between Chess/Playing Chess and the Daily Life

Table 6 lists the children's responses to Q9 that ask them make an analogy between chess and life.

Table 6. Chess analogies of children

Types of analogies	Chess / Playing chess is like	f	%
functional	war, conquering and war games	14	20.00
functional	animals which hunt each other	10	14.29
functional	logic games	4	5.71
functional	sports (running, jumping and moving)	3	4.29
functional	driving car (move cars like chess pieces)	2	2.85
structural	animals (horses and elephant)	12	17.14
structural	a game of checkers	10	14.29
structural	cartoons about kings and queens	3	4.29
structural	playing computer games	2	2.85
casual	having fun	5	7.15
casual	thinking (problem solving)	3	4.29
causal	painting (decide the colours before painting)	2	2.85
Total		70	100.00

Table 6 shows that nearly 80% children can make an analogy between chess/ playing chess and the life (17 children could not make an analogy between chess and life). Analogies in this study consist of three categories; these are functional, structural and casual analogies. It is seen that nearly 47% analogies come from functional analogies, almost 39% analogies belongs to the structural analogies category and nearly 14% analogies are casual analogies. War games, animals (horses and elephant), animals which hunt each other and checkers game analogies are common analogies (totally 65%). These three analogies are the most commonly stated by the children to correlate chess/playing chess and the children's daily life. Painting, playing computer game and driving car analogies have least rate of analogies in group (totally 9%).

Analogies are common used techniques in education. Maarif (2016) claims that making analogy ability affects the learning process positively. Treagust, Harrison and Venville (1998) state that when the students construct their own knowledge, it is both transferable, and usable, later learning situation. So, most of the children (almost 80%) in this study were able to make analogy between chess and daily life. According to Newby and Stepich

(1991) an analogy is a connection between two or more objects according to structural, functional and/or causal similarities. Moreover, by the help of the logical procedure of the analogy, the syntactic and the semantic process were easily and properly obtained by students (Falsetti & Alvarez, 2015). Thus, 88% analogies of the children in the current study were almost equally divided between structural and functional analogies. In the former the children compared the chess pieces and boards with checkers pieces and boards. Three children made a connection between the knight and bishop chess pieces and animal figures; the knight being a horse and the bishop being an elephant (the bishop in Turkish is called "elephant" as in the original Indian game). These results are consistent with the Lin, Anderson, Hummel, Jadallah, Miller, Nguyen-Jahiel, Morris, Kuo, Kim, Wu, and Dong (2012) finding that there were 13% surface-only comparisons, 52% surface + relation analogies and 35% relationally analogies in their research.

Under the category of functional analogy more than 15% children over the whole sample, made a connection between war games/ to conquer and chess. Children, who make functional analogy, make this analogy by paying attention to logic of the game and also by considering the result of the game. However, it can be understood from these analogies which contain reference to violence such as in wars that children are deeply affected by these types of event. Although there is not any question related with social or media effects on child's development in this study, there are extensive and effective studies on literature about those effects. For instance, Moss (2010) stated that children are directly involved in wide social experience; social events (wars, religions and migrations) and events are constructed and interpreted through familiar and collective memory. Besides, media is also another tool that has deep effects on children. According to Funk, Brouwer, Curtiss and McBroom (2009) preschoolers were exposed to an average of 12 hours of screen media in a typical week. From this information, it can be said that children are affected from social environment and media, and also they integrate the knowledge they gathered from the media and social environment to their daily lives.

It is thought that the roots of those analogies that refer to violence (wars and to conquer) is based on the social environment and media. Furthermore, two children, in the functional analogy group, compared the movement of chess pieces with animals hunting strategies. Children who made causal analogies (12%), generally evaluated chess as just play in which they had fun. They explained that in games we have fun, so since chess is game then we can also have fun. Also two children, who did not like chess, claimed that chess was like a lecture and they thought that chess was boring. In this analogy, the children appear to create a causality link between chess and lectures. Thibaut, French and Vezneva (2010) claimed that children from six to eight generally make analogies between two objects according to their shapes and their colours. In this study, children also made their analogy according to the shapes (boards or pieces) and also functional similarities. For the children making an analogy according to causality similarities the reason could be that they lack experience and knowledge, and their cognitive level was not high enough to allow the creation of more functional or causal analogies. However, almost 85% children in the current study connected chess in their analogies as a part of daily life.

Conclusions

According to results of emotions/feelings parts the children have positive emotions/ feelings towards chess. They prefer playground activities and playing chess to TV. Moreover, instead of reading book or playing with Lego, children prefer computer game. Nearly 65% of the participant children stated that they were happy and excited when playing chess furthermore; wanting to learn new things and win the game were the common responses of these children. These results indicate that children have strong positive emotions and feelings about playing chess which affect their game/activity choices. Analysing question 2, it can be understood that nearly 11% children is bored when they play chess, usually prefer other activities. Generally, outdoor activities and playing computer games are choice of these children. At this point, it can be thought that playing chess in the open air on a huge board and large pieces or playing chess on a computer (since 45% of the children preferred to play in the playground) can help children increase their interest towards the game. Generally, according to children chess is a funny (60%) and important game (59%), however, nearly 55% children think that chess is a complex game. More children (70%) think that chess requires intelligence and logical activity (almost 75%). Moreover, more children (60%) consider that clever person play chess.

Many children think that chess rules are necessary and enable them to play. More than half of children depend the rules and do not want to change the rules. In this group nearly one third children accepted that rules are necessary and they make chess understandable, with the help of the rules the chess is not complicated game. Lots of children want to be queen, rock and king. They prefer these pieces because of their powerful movement ability and valuable in game. Other children want to be the bishop, knight, rook or pawn because of their shape and movement type. Thoughts are not always the reflection of inherent thoughts. Choices are the remarks on the

inherent thoughts and judgements. Referring to questions 3, 7 and 8, there is a difference in the children's responses in terms of the things which make the children happy when they play chess and whether they think playing is more important than winning. According to comparative analyses results, while children claimed that playing is important (nearly 80%), in question 11 they chose the most powerful and valuable pieces (nearly 75%) and also winning at chess makes them happy (nearly 72%). Moreover, the children who said that winning is important in chess, also mainly chose the queen and king and emphasized that winning made them happy.

Nearly 80% children can make an analogy between chess/ playing chess and the life. It is seen that nearly 47% functional analogies, almost 39% structural analogies and nearly 14% casual analogies are determined in this question. Generally, children's analogies related with war games, animals (horses and elephant), animals which hunt each other and checkers game (totally 65%). It can be said that these four analogies are the most commonly stated by the children to correlate chess/playing chess and the children's daily life. On the other hand, rarely children use painting, playing computer game and driving car as analogies samples for chess (totally 9%).

Implications

This study carried out with 87 children from two public preschools. The small number of participants can be thought as a limitation of this study. Moreover, using only one questionnaire for the children and not obtaining teachers' opinions may be another limitation of the research. To overcome some of the limitations given above further implementations of the questionnaire could be carried out in different schools and with different age groups. The questionnaire can also be modified and extended in order to gain more data. Furthermore, a questionnaire could be developed for the teachers and parents combined with interviews to elicit additional information. Longitudinal research with the same group of children could be carried out to determine whether their views change over time and how their attitudes to chess are reflected in other activities in the school curriculum.

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Appendix I. Children's Chess Questionnaire

1. Choose activities you would like to do





2. How do you feel when you play chess?

a)  b)  c)  d)  tired e)  bored

3. What makes you happy when you play chess? Why does this make you happy?

4.

	Agree			**Disagree**	
Playing chess is:					
Funny					
Complex					
Important					
Agree or disagree?					
A person who plays chess is clever					
Chess is an requires intelligence					
Chess is a logical activity					

5. What would happen if these rules did not exist?

6. Do you want to change the rules of chess?

7. Which chess pieces do you want to be? Why?

8. Is it more important to play or win at chess? Why?

9. Compare the game of chess and playing it with your daily life.