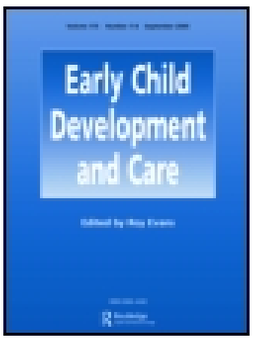

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Early Child Development and Care

ISSN: 0300-4430 (Print) 1476-8275 (Online) Journal homepage: http://www.tandfonline.com/loi/gecd20

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To cite this article: Sadiye Keleş & Özlem Yurt (2016): An investigation of playfulness of pre-school children in Turkey, Early Child Development and Care, DOI: 10.1080/03004430.2016.1169531

To link to this article: http://dx.doi.org/10.1080/03004430.2016.1169531

Published online: 31 May 2016.

EARLY CHILD DEVELOPMENT AND CARE, 2016
http://dx.doi.org/10.1080/03004430.2016.1169531

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An investigation of playfulness of pre-school children in Turkey

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ABSTRACT

The first aim of this study is to examine the validity and reliability of the Children's Playfulness Scale (CPS), which was developed to determine pre-school children'sdisposition towards play. The second aim is to test the effects of some variables on playfulness and whether such variables affect playfulness levels of children. About 196 children participated in the research group for testing the validity and reliability of the scale, and 600 children were involved in a comparative analysis. Results of the analysis showed that the 'CPS' was a valid and reliable scale. The interaction effect of related variables was not found to be significant. In addition, gender affected the social spontaneity dimension, and the number of siblings affected manifest joy and sense of humour sub-dimensions. Findings suggested that birth spacing between siblings, gender of siblings, and gender roles could be involved as variables in the future research.

ARTICLE HISTORY
Received 2 March 2016
Accepted 20 March 2016

KEYWORDS
Playfulness; pre-school; validity-reliability; number of siblings; birth order

Introduction

The term 'playfulness' is generally used in play-themed and personality-focused literature. While there is well-detailed quantitative and qualitative research about play (theoretical, developmental, methodological, and contextual), there is limited research about playfulness in the field. Playfulness has a role in the origin of personality and early period developmental outcomes in several areas. Playfulness research focuses on different age groups such as infancy (Dodd & Wilson, 1998), early childhood period (Barnett, 1990, 1991a, 1991b, 1998, 2007; Bundy, 1997a, 1997b; Cornelli Sanderson, 2010; Lieberman, 1965, 1966, 1977; Rentzou, 2013; Truhon, 1979, 1983), adolescence period (Hess & Bundy, 2003; Staempfli, 2007), and adulthood (Barnett, 2011; Glynn & Webster, 1993; Magnuson & Barnett, 2013; Proyer, 2013, 2014; Yarnal & Qian, 2011), as well as children with special needs (Bronson & Bundy, 2001; Fabrizi, 2014; Hamm, 2006; Harkness & Bundy, 2001). These researches present much information about the developmental line of playfulness over human life and/or its transformational structure.

Conceptualization of playfulness

Researchers have defined and conceptualized playfulness in different ways since the 1960s. While most of these definitions suggest that playfulness is a tendency, some definitions explain it as behaviour, attitude, style, capacity, and psychological state. Lieberman (1965, 1977) coined the term in literature for the first time, expressing it as the attitude of children towards games and defined it as the core of games. According to Lieberman (1977), playfulness is what children could easily involve in

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during playing activities and behaviours they showed during the game. Barnett (1998, p. 99) following the leading research of Lieberman about playfulness, defining playfulness as 'an individual tendency, centering some personal dispositions such as cheerfulness, joyfulness, funny, player-attitude, humoristic, energetic, easily smiling, easygoingness, creativeness, curiosity, outspoken, innovativeness, and talkativeness'. Similarly, Bundy (1997a), basing their research on Lieberman's (1977), defines playfulness as a playing attitude and hypothetically specified this structure as the contributions of children to play. Cooper (2000) accepted Bundy's playfulness term in his contextual play model and indicated that children brought both their developmental competencies and their own personal playing styles into play, using 'personal play style' as a term for playfulness. According to another researcher, Cornelli Sanderson (2010, p. 1), who considers playfulness as a natural tendency, playfulness is 'a free and entertaining communication of children with the environment, connecting to this world and the journey of discovering this world'.

When the other definitions and perspectives are considered, playfulness is referred as a perception, or attitude,[1] letting individuals behave spontaneously (Aguilar, 1985); a psychological state helping individuals to think flexibly, take risks with ideas, and contribute to creative thinking (Youell, 2008); a combination of children's control feelings over the environment, inner motivation, and creativeness (Morrison, Bundy, & Fisher, 1991); an inner predisposition of having player characteristics to interactions which occurred with environment and different events (Trevlas, Matsouka, & Zachopoulou, 2003); and disposition to play (Taylor, Rogers, & Kaiser, 1999). As a result of the recent studies, Barnett (2007, p. 955) also emphasized playfulness as a 'capacity of differently expressing a situation with pleasure, entertainment, or humor, alone or with others'.

Playfulness generally contributes to the healthy development of children (Cornelli Sanderson, 2010), and also specifically contributes to understanding and expressing their feelings, developing their creativeness and problem-solving skills, and, in addition, using and developing their sense of humour (Barnett, 1991a, 1991b, 1998, 2007). Research emphasizes the developmental importance of playfulness. On the other hand, scales developed to measure the playfulness of children are limited. Lieberman (1965, 1966) is the first researcher developing a scale to measure the playfulness of children. Lieberman (1977) has constructed playfulness in this scale as five sub-dimensions. These sub-dimensions are physical spontaneity, including enthusiastic, harmonious movements of the whole body or some parts; social spontaneity, including positive social relationships with peers and the ability to easily get involved in peer groups; cognitive spontaneity, including creativeness and flexible thinking; manifest joy, including laughing, happiness, and entertainment terms; sense of humour, including enjoyment of funny events, noticing and distinguishing enjoyable situations, and gentle teasing. Lieberman showed that four out of five sub-dimensions are more relevant for pre-school children and physical spontaneity is less relevant; playfulness is considered as a single personality dimension, described with these sub-dimensions. Barnett (1990, 1991a, 1991b, 1998, 2007) pushed the playfulness research, based on Lieberman's research, and substantially contributed to the description and measurement of this structure. Barnett (1990) considered playfulness, with its five sub-dimensions, reorganizing the items in the Lieberman's measurement and found that scale is valid and reliable.

Truhon (1979, 1983) argued that playfulness has two aspects, not a single dimension as Lieberman suggested. These dimensions are a cognitive component, involving creativeness and realizing a joke, and an affective/emotional component occurring in the cheer of play and the laugh in a joke. Truhon, making some modifications, used Lieberman's playfulness scale to observe children aged between five and six. Results of the study showed that the playfulness-entertainment sub-dimension predicted manifest joy and a sense of humour, and the playfulness-intelligence sub-dimension predicted intelligence and cognitive spontaneity sub-dimensions. Thus, Truhon emphasized that playfulness predicts playing activities well.

Bundy and Clifton (1998) have criticized Barnett's conceptualization of playfulness, stated that manifest joy cannot be accepted as a field, and this area mostly contributes to playfulness. Bundy (1997a) indicated that dimensions of playfulness were internal motivation, internal control,

freedom to suspend reality, and a frame holding all these aspects together. Bundy (1997a) and Cooper (2000) agreed that playfulness dimensions were internal motivation, internal control, and freedom. Rogers et al. (1998), using a theoretical model, developed a 30-item scale for mothers or teachers to measure children's playfulness levels and applied it to a range between pre-school children and 4th grade students. Factor analysis results showed that the Child Behavior Inventory of Playfulness has two dimensions, with 21 items such as general disposition to play and external factors; it is a valid and reliable measure.

Play and playfulness

Playfulness is congruously used with the concept of play, although the terms 'play' and 'playfulness' have different meanings (Lester & Russell, 2010; Youell, 2008). When the related concepts are considered, it has been concluded that play is a behaviour and playfulness is a personal disposition (Lieberman, 1977). Play includes inner motivation activities, while playfulness indicates incentive situations (Day, 1984). In addition, play involves breaking rules, while playfulness includes entertainment, as well as playing (Bateson & Martin, 2013).

Playfulness is an internal construct with a positive affective state, which develops with time as a result of experience and interaction. It also involves children's qualities, which they bring into play. This internal state especially contributes to development in the educational context. On the other hand, playfulness and play correspond to each other by making play that has its players' characteristics easier. Although each player's behaviour could be played, the opposite is possible when aggression and competence are mixed into play behaviours. Despite children seeming to play in some activities, it is not clear whether the child plays with their own desire or not (Bateson & Martin, 2013; Howard, Bellin, & Rees, 2002). Also, the strong relationship of playfulness with conformity and coping shows that it could be one of the most important dimensions of playing (Hess & Bundy, 2003; Saunders, Sayer, & Goodale, 1999).

Variables affecting playfulness

Gender was considered to be the most basic variable in the research investigating playfulness and the factors that affect it. Results of said research indicated that boys have higher scores in playfulness and its sub-dimensions than girls (Barnett, 1991b; Tae-Hyung, Tae-Hyun, & Jae-Shin, 2014; Zachopoulou, Trevlas, & Tsikriki, 2004). On the contrary, literature suggested substantial research emphasizing the fact that female students have higher playfulness scores compared to male students (Cornelli Sanderson, 2010; Saunders et al., 1999). Similarly, no relationship was found between gender and imaginative playfulness (Shin, 2004).

There are contradictory findings about whether age is a critical variable for playfulness and its sub-dimensions or not. While some research (Rentzou, 2013) suggested that age is a determinative factor in terms of playfulness, some (especially correlational) research (Barnett, 1998) found that there is no relationship between these two constructs. There is research emphasizing an increase in the sub-dimensions of playfulness in terms of age (Barnett, 1991b; Cornelli Sanderson, 2010; Lieberman, 1965, 1977). However, there is also research suggesting that younger children have higher mean scores (Saunders et al., 1999).

Research indicated that later-born male siblings have higher scores and seem more playful in the all sub-dimensions of playfulness (Barnett, 1991b; Barnett & Kleiber, 1984). However, first-born children have higher scores on sense of humour and imagination (Barnett, 1991b). In addition, there is research emphasizing the limited relationship between playfulness scores and numbers of siblings (Barnett, 1991b). Besides, boys who have more sisters are more playful and girls who have fewer sisters are more playful (Barnett & Kleiber, 1984). Also, it was found that while boys who have extended family are physically more active, girls who have extended family have lower scores on the manifest joy sub-dimension (Barnett, 1991b). Boys who have extended family seem more

playful on all of the sub-dimensions, and girls who have extended family seem less playful in nearly all sub-dimensions of playfulness (Barnett & Kleiber, 1984).

Rentzou (2013) found a significant relationship between the total scores and all sub-dimensions of family types, number of family members, and playfulness, while Barnett and Kleiber (1984) indicated that there is a strong relationship between the occupation of a child's father and the playfulness of daughters. The same study showed that older mothers have daughters who have lower playfulness scores than younger mothers, and this relationship only occurs in the manifest joy sub-dimension for sons.

Lieberman (1965, 1977) is the first researcher to have investigated the relationship between playfulness and creativity and creative thinking. Lieberman (1965) found a significant relationship between five dimensions of playfulness and creative thinking (ideational fluency, spontaneous flexibility, and originality). Similarly, the research indicated a significant relationship between playfulness with all sub-dimensions and the originality sub-dimension of creativity (Barnett & Kleiber, 1982), playfulness and motor creativity (Trevlas et al., 2003), playfulness and creative thinking (Christie & Johnsen, 1983). On the contrary, Truhon (1979, 1983) emphasized that there is a weak relationship between playfulness, play, and creativity. Taylor and Rogers (2001) could not find a significant relationship between playfulness and creativity either.

Research exploring the relationship between playfulness and environment emphasized that quality of care and education affect playfulness levels of children (Cornelli Sanderson, 2010). One study found that children are more playful at home and less playful at school (Rigby & Gaik, 2007). Another study showed that individuals with high levels of playfulness are more flexible when they encounter problems (Bundy, 1993), and addressed the contributions of playfulness for coping with stress. Playfulness was found to be related to using effective coping skills (Saunders et al., 1999), conformity behaviours, and happiness (Lester & Russell, 2010).

Considering that playfulness is a personal disposition and has a large contribution to children's developmental outcomes, there is a necessity to determine and measure this structure. There is no scale measuring the playfulness levels of children in Turkey and only a limited number of researchers have investigated factors affecting playfulness. This study aimed to the Turkish adaptation of Children's Playfulness Scale (CPS) and an investigation of playfulness levels of pre-school children in terms of different factors. Therefore, the research questions in this study are as follows:

1. Is the CPS a valid and reliable scale for *Turkish* pre-school children in the age range of 4–7?
2. Is there a significant difference (three-way main effect) in the playfulness levels in terms of gender, birth order, or number of siblings? On the other hand, is there an interaction between gender and birth order, gender and number of siblings, birth order and number of siblings, and between these three independent variables (gender, birth order, and number of siblings)?
3. Do girls and boys differ in terms of general playfulness (physical, social and cognitive spontaneity, manifest joy, and sense of humour)?
4. Do children with different birth orders differ in terms of general playfulness (physical, social and cognitive spontaneity, manifest joy, and sense of humour)?
5. Do children who have different sibling numbers differ in terms of general playfulness (physical, social and cognitive spontaneity, manifest joy, and sense of humour)?

Method

Model

The research was conducted in two steps. The first step consists of validity and reliability analysis of the CPS, and the second step is an investigation of the playfulness of children in the basis of several variables. A descriptive research model was used in the first step, while a relational screening model, which is one of the general screening models, was used in the second step.

Participants

Eight hundred and seventy-five children (79 children for the pilot study + 196 children for the validity and reliability study apart from that 600 children for the relational screening), in the age range of 41–80 months, and their teachers participated in the study. The sample of the study was determined as the 'convenience sampling method' of non-random sampling methods, which is widely used in the educational research area (McMillan, 1996). One hundred and ninety-six children were included in the group in which confirmatory factor analysis (CFA) was conducted. Of these, 54.6% of these children were girls. The ages of children were in the range of 41–74 months ($X = 63.2$; SD = 6.8). About 49.7% of children involved in the second step of the study were girls and the mean of their ages was 64.20 months ($X = 64.20$; S = 7.08). Table 1 shows the distribution of the number of siblings and birth order variables for the related group. The data for this step were gathered from the preschools of 47 primary schools across 25 cities in total (Adana, Aksaray, Ağrı, Ankara, Batman, Diyarbakır, Elazığ, Gaziantep, Gümüşhane, Hatay, İstanbul, İzmir, Kahramanmaraş, Kocaeli, Manisa, Muş, Rize, Siirt, Sivas, Şanlıurfa, Tekirdağ, Tokat, Trabzon, Yozgat, and Zonguldak).

Measurements

Children's Playfulness Scale

The CPS was constructed by Barnett (1990) to measure the individual playfulness of 29–61.5 month children on the basis of Lieberman's pioneering research. The scale consists of 23 items and 5sub-dimensions (physical spontaneity, social spontaneity, cognitive spontaneity, manifest joy, and sense of humour). The physical spontaneity sub-dimension consists of items involving energy spending, physical difficulty, and risk. The social spontaneity sub-dimension consists of items involving the interaction on the basis of cooperation and competition, reflecting leader or follower characteristics, and feelings of comfort or deficiency during these interactions. The cognitive spontaneity sub-dimension consists of items involving little muscle movements, symbolic efficiency at imaginary issues and roles, and the use of playfulness ability. The manifest joy sub-dimension consists of items involving affective spontaneity and clarity of excitement at several single or multi plays. Finally, the sense of humour sub-dimension consists of items involving the use of verbalization and artificialness. The scale is 5-point Likert-type (1 = 'Sounds exactly like the child', 5 = 'Doesn't sound at all like the child') and each item has 1–5 points. The total score that can be taken from the scale is between 23 and 115. There are two reverse items in the scale (#16 and #22). CPS, which is originally English, was found to be valid and reliable (Barnett, 1990, 1991a). At the same time, scale was adopted to only one different culture (Zachopoulou, 2003).

Procedure

Lynn A. Barnett has been contacted and asked for permission to make Turkish adaptation to the CPS. The TRAPD model (Translation, Review, Adjudication, Pretesting, and Documentation), emphasized by Harkness (2003), was used during the translation process. Items in the original form were

Table 1. Distribution table of sample group (for relational screening model) in terms of demographic variables.

	Girls	Boys	Total
Number of siblings			
Only child	56	69	125
Child with one sibling	148	138	286
Child with two or more siblings	94	88	182
Birth order			
First child	144	149	293
Second child	92	81	173
Third or later-born child	62	65	127

forwarded to four independent translators, who have a command of both languages. Then, translated texts were examined by researchers, in terms of each item, discussed and decided on for convenient statements. In the third step, which is the decision step, agreed statements from a previous step were forwarded to five academics. After learning the point of views of area specialists, the pre-administration process was started and a form was completed by teachers for 79 children. In the pre-administration process, an item (#16) was found to be not understood and, as such, that statement was reorganized. The items of the Turkish CPS are presented in the Appendix. In the first step of the study, pre-school teachers were contacted in the second term of the 2014–2015 academic year, informed of the study and scale, and asked whether they were willing to participate in the study. Teachers who volunteered to participate in the study were given the forms. They filled out the scales for 196 children in the first step of the study. Finally came the documentation stage. After the validity and reliability study, this process was repeated and volunteer teachers filled out the scale for 600 children for a comparison study.

Analysis

The analysis of the validity and reliability of the study was conducted in the first step. CFA was used to test whether CPS measures what it claims to measure (for validity). Internal consistency reliability (Cronbach's Alpha coefficient) and construct reliability (McDonalds's Omega coefficient) were computed for the reliability study. In addition, 2 (gender = girl/boy) × 3 (birth order = first child, second child, third or later child) × 3 (number of siblings = only child, child with one sibling, child with two or more siblings) three-way analysis of variance (ANOVA) was performed to examine the playfulness of children in terms of several variables, and it was examined whether independent variables interact with each other when playfulness scores differed. Analyses were conducted for three main effects and interactions of gender*birth order, gender*number of siblings, birth order*number of siblings, gender*birth order*number of siblings. The *posthoc* Tukey HSD Test was used for multiple comparisons when the difference was significant. Also, a multivariate analysis of variance (MANOVA) was performed to test whether children's physical, social, and cognitive spontaneity, sense of humour, and manifest joy scores differ in terms of some independent variables (gender, birth order, and number of siblings). SPSS and LISREL programmes were used for the analysis.

Results

Descriptive statistics

Descriptive statistics of CPS for the CFA sample are presented in Table 2. According to results, 54.6% of children are girls. The age range of children is between 41 and 74 months (mean of 63.26 months). There is no significant difference between genders in terms of total scores [$t_{(196)} = 0.30$, $p > .01$] and the mean scores of girls and boys are very close ($X_{girls} = 81.8$; $X_{boys} = 81.3$).

Validity and reliability

The five-factor construct of the scale was tested to determine whether the factor construct of CPS is confirmed for the sample group in the study via first-order CFA. According to CFA results, suggested modifications showed that the relationship between Item 1 and Item 3, and Item 11 and Item 12

Table 2. Descriptive statistics for the CPS total score.

	Girls	Boys	Total
N	107	89	196
Mean ± SD	81.8 ± 20.7	81.3 ± 17.4	81.5 ± 19.2
Range	83	76	83
Skewness	−0.56	−0.60	−0.57
Kurtosis	−0.77	−0.10	−0.53

negatively affected goodness-of-fit indexes for the model. When the items were reconsidered, they were found to have close meanings and the errors of items were correlated. After these modifications, the model was tested again. Then, the second level CFA was performed. The diagram for the second level CFA of CPS is presented in Figure 1. No negative loading was found for all standardized parameter estimate loadings (λ). Also, for CPS items in the second-level CFA model, all were found to be higher than zero and determined as important descriptors. Standardized parameter estimates were determined as .68–.91 for the physical spontaneity sub-dimension, .48–.89 for the social spontaneity sub-dimension, .55–.87 for cognitive spontaneity, .68–.90 for expression of pleasure, and .63–.82 for the sense of humour sub-dimension (Figure 1). The second-level, five-factor model was tested via CFA. According to the results, goodness-of-fit indexes indicate an acceptable model (x^2/df = 2.84, RMSEA = 0.097, CFI = 0.97, NFI = 0.96, NNFI = 0.97, GFI = 0.78, RFI = 0.95).

Alpha coefficients and McDonalds's value (construct reliability) were calculated and found as .88 for the physical spontaneity sub-dimension, .88 for the social spontaneity sub-dimension, .80 for the cognitive spontaneity sub-dimension, .93 for the manifest joy sub-dimension, and .87 for the sense of humour sub-dimension (Table 3).

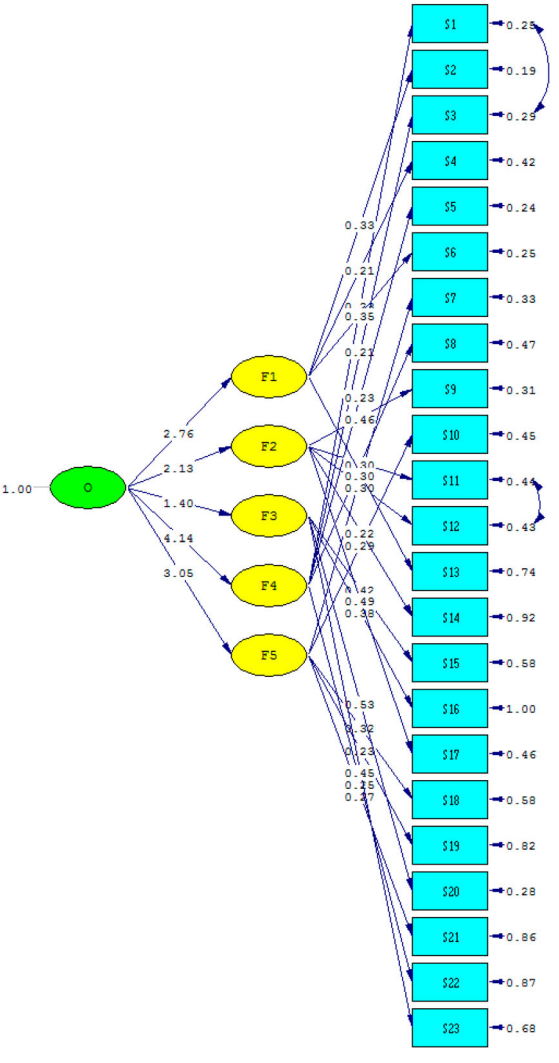

Figure 1. 2nd Level CFA. Chi-Square = 634.21, df = 223, *p*-value = 0.00000, RMSEA = 0.097.

Table 3. Reliability values for CPS.

Sub-dimensions	Number of items	Alpha reliability	Construct reliability
Physical spontaneity	4	0.87	0.88
Social spontaneity	5	0.87	0.88
Cognitive spontaneity	4	0.79	0.80
Manifest joy	5	0.92	0.93
Sense of humour	5	0.87	0.87

Table 3 shows coefficients for alpha reliability and construct reliability. Alpha reliability values change between .79 and .92, while construct reliability values fall between .80 and .93. Also, both alpha reliability and construct reliability coefficients for each scale sub-dimensions are higher than .79.

Table 4 shows the mean scores and standard deviations of CPS. Total scores show that the mean scores of girls and boys are close to each other. However, the mean scores of girls are higher than those of boys. When mean scores were considered, in terms of sub-dimensions, the sub-dimension with highest mean score was Manifest Joy and the sub-dimension with lowest mean score was Cognitive Spontaneity.

Main and interaction effects

Three-way ANOVA was performed to test the effect of gender, birth order, and number of siblings on playfulness scores (Table 5). Children were separated into three groups according to their birth order (first child, second child, third child, and/or later), three groups according to the number of siblings (no sibling, one sibling, and two or more siblings). Homogeneity of variances assumption was not confirmed because the Levene's Test result was found to be significant ($p = .036$). Therefore, the significance level was determined as .01 for the main effect and interaction effect. The interaction effect between gender, birth order, and number of siblings $F_{(2, 578)} = 1.29$, $p = .27$, interaction effect between gender and birth order $F_{(2, 578)} = 0.18$, $p = .84$, interaction effect between gender and number of siblings $F_{(2, 578)} = 0.26$, $p = .77$, and interaction effect between number of siblings and birth order $F_{(2, 578)} = 0.82$, $p = .51$ were not found to be statistically significant. On the other hand, when gender, birth order, and number of siblings were separately tested, the main effects of these variables were not found as significant (respectively, $F_{(2, 578)} = 1.58$, $p = .21$; $F_{(2, 578)} = 1.82$, $p = .16$; $F_{(2, 578)} = 0.50$, $p = .61$).

A MANOVA for each independent variable was performed to determine the differences between the playfulness scores of children in terms of gender, birth order, and number of siblings. Five dependent variables were used: Physical, social and cognitive spontaneity, manifest joy, and sense of humour. Preliminary assumptions were checked as normality, linearity, univariate and multivariate extreme values, homogeneity of variance–covariance matrices, and multiple linearity. The Mahalanobis value was calculated (22.19) to test multivariate normality, and only one value was extracted from the analysis because it is higher than the critical value, 20.52. Correlation coefficients between dependent variables were examined to test the homogeneity of variance–covariance matrices and all correlations were found to be lower than .9. The Box's Test significance value was found as .006 ($p > .001$) for homogeneity of covariance matrices in terms of the gender variable, and homogeneity of

Table 4. Mean and standard deviation values of CPS.

	Gender					
	Girls	SD	Boys	SD	Total	SD
Physical spontaneity	15.12	3.97	15.88	3.63	15.50	3.82
Social spontaneity	18.61	4.46	17.66	4.44	18.13	4.47
Cognitive spontaneity	13.01	3.44	12.84	3.61	12.92	3.52
Manifest joy	19.06	5.13	18.85	4.99	18.96	5.06
Sense of humour	16.09	4.92	16.18	5.05	16.13	4.98
Total playfulness score	81.89	19.91	81.41	19.39	81.65	19.64
N	298		295		593	

Table 5. Three-way (gender, number of siblings, and birth order) ANOVA results.

	Sum of squares	SD	Mean squares	*F*	*p*
Gender	599.568	1	599.568	1.57	.21
Number of siblings	378.546	2	189.273	0.50	.61
Birth order	1387.139	2	693.570	1.82	.16
Gender*number of siblings	196.573	2	98.286	0.26	.77
Gender*birth order	135.970	2	67.985	0.18	.84
Number of siblings*birth order	1240.309	4	310.077	0.81	.52
Gender*number of siblings*birth order	987.438	2	493.719	1.30	.27
Error	219,883.309	577	381.080		
Total	4,181,966.000	593			
Confirmed total	228,346.438	592			

*$p < .01$.

covariance matrices assumption was confirmed. According to Levene's Test results for homogeneity of error variances, calculated values for all dependent variables were higher than .05. Then, there is a significant difference between girls and boys in terms of general playfulness scores, $F_{(5,\ 587)} = 11.72$, $p < .05$; Wilk's Lambda = .91; $\eta^2 = .09$). Considering the results related to the gender variable, social spontaneity scores were found to differ [$F_{(1,\ 591)} = 6.75$, $p = .010$; $\eta^2 = .011$] according to alpha level (.01) with Bonferroni correction. Girls ($M = 18.61$, SD = 4.46) have higher scores than boys ($M =$ 17.66, SD = 4.44) in terms of social spontaneity.

All assumptions were controlled for birth order as a second independent variable. The Box's Test significance value for homogeneity of covariance matrices, in terms of the birth order variable, was .24 ($p > .001$). Levene's Test results for homogeneity of error variance indicated that social spontaneity ($p = .03$) and manifest joy ($p = .00$) were found to be lower than .05.[2] Pillai's trace scores were used because the assumption for the homogeneity of error variances was not confirmed. Then, main effect of birth order was not found to be significant in terms of playfulness scores, $F_{(2,\ 590)} = 2.69$, $p > .025$, Pillai's Trace = .028; $\eta^2 = .014$.

Assumptions for the third variable, which is number of siblings, were checked. The Box's Test significance value for the number of siblings variable was calculated as .21 ($p > .001$) and the homogeneity of covariance matrices assumption was confirmed. Levene's Test results for homogeneity of error variance showed that *p* value for social spontaneity was lower than .05; for that reason, a more conservative alpha value was used. Pillai's trace scores were used because homogeneity of error variances was not confirmed. Findings indicated that number of siblings has a significant effect on playfulness scores, $F_{(2,\ 590)} = 2.01$, $p < .05$, Pillai's Trace = .034; $\eta^2 = .017$. When results about the number of siblings variable were separately considered, scores of social spontaneity [$F_{(1,\ 591)} = 5.74$, $p = .003$; $\eta^2 = .019$], manifest joy [$F_{(2,\ 590)} = 5.94$, $p = .003$; $\eta^2 = .020$], and sense of humour [$F_{(2,\ 590)} =$ 6.66, $p = .001$; $\eta^2 = .022$] did not significantly differ in terms of the alpha level with Bonferroni correction ($p = 0.025/5 = 0.005$). *Posthoc* comparisons, performed by Tukey HSD test, showed that social spontaneity scores of children with one sibling were higher than children with two or more siblings ($p = .002$). Manifest joy scores of children with one sibling were higher than children with two or more siblings, and were different and in favour of children with one sibling ($p = .003$). Sense of humour scores of children with no siblings and children with two or more siblings were different. Sense of humour scores of children with one sibling and children with two or more siblings were significantly different, in favour of children with one sibling ($p = .001$).

Discussion and conclusion

Playfulness is a term that was generally used by Western researchers. In addition to birth order, number of siblings, gender of siblings, and family pattern of children variables, focusing on the cultural diversity (Taylor & Rogers, 2001; Taylor et al., 1999) makes the findings from different cultures valuable. In this manner, the term playfulness should be gained in early childhood development and education literature. The first aim of this study was to test validity and reliability of the CPS in

order to be able to investigate several cultural differences and contribute to research about playfulness in Turkey. Results of the construct validity test of the scale showed that the goodness-of-fit indices of scale for the five-factor model were acceptable. Also, standardized parameter estimates were between .68 and .91 for the Physical Spontaneity sub-dimension, .48–.89 for Social Spontaneity, .55–.87 for Cognitive Spontaneity, .68– .90 for Manifest Joy, and .63–.82 for Sense of Humour. The reliability of scale was confirmed because the levels for each sub-dimension (Alpha and construct reliability) were higher than 0.70 (Nunnally & Bernstein, 1994). According to the results, CPS was found to be a valid and reliable measure. Barnett (1998) showed that alpha coefficients were 0.81 for total scale, 0.87 for Physical Spontaneity, 0.82 for Social Spontaneity, 0.82 for Cognitive Spontaneity, 0.80 for Manifest Joy, and 0.72 for Sense of Humour. Correspondingly, in research that investigates whether the scale is also convenient for other cultures, CPS was found to be a valid and reliable measure for the related culture; Zachopoulou calculated 0.87 for Physical Spontaneity, 0.85 for Social Spontaneity, 0.84 for Cognitive Spontaneity and Sense of Humour, and 0.86 for Manifest Joy (as cited in Rentzou, 2013).

Manifest joy was found to have the highest mean score (for both girls and boys) and cognitive spontaneity was found to have the lowest mean score (for both girls and boys) in terms of the mean scores in this study. Similarly, Zachopoulou et al. (2004) indicated that cognitive spontaneity was the sub-dimension with the lowest mean score (for both girls and boys). However, social spontaneity was the sub-dimension with highest mean score for girls and manifest joy was the sub-dimension with highest mean score for boys. The manifest joy sub-dimension was consistently found to have the highest mean score in several researches and has the most significant relationship with CPS total scores (Rentzou, 2013).

Gender, number of family members, and birth-order variables are the mostly addressed variables in the playfulness literature (Barnett, 1991b; Cornelli Sanderson, 2010; Tae-Hyung et al., 2014; Trevlas et al., 2003). The second aim of this study was to examine the differences between total playfulness scores in terms of gender, birth order, and numbers of siblings variables. Interaction effect between gender, birth order, and numbers of siblings, in terms of playfulness scores, was not found to be significant. On the other hand, when gender, birth order, and numbers of sibling variables were separately considered, no significant effect was found on total playfulness scores. Findings about the gender variable in this study are consistent with research findings of Saunders et al. (1999) and Tae-Hyung et al. (2014). Saunders et al. (1999), in their research with 19 pre-school children between 36 and 63 months, and Tae-Hyung et al. (2014), in their research with 128 children and their families, found that gender does not effect total playfulness scores. There is no other research testing the interaction effect of variables that could have possible effects on total playfulness scores of children. For this reason, bearing in mind the notion that playfulness is defined as an aspect of personality, there has been a comparison between personality-based research findings. Dixon, Reyes, Leppert, and Pappas (2008), in their research investigating the effect of age, gender, and numbers of sibling variables on personality in extended families, found that gender and numbers of sibling have no significant effect, and only age has a significant effect on extraversion. Related research findings are consistent with the finding of this study.

The third aim of this study was to investigate whether girls and boys differ in terms of general playfulness scores (physical, social, cognitive spontaneity, manifest joy, and sense of humour). Accordingly, general playfulness scores were found to differ in terms of the gender variable. This difference is in favour of girls in only social spontaneity scores. This finding of the study has a controversy with the findings of several researches, such as Barnett (1991b), Zachopoulou et al. (2004), and Tae-Hyung et al. (2014). These demonstrated that social spontaneity scores of girls and boys did not significantly differ, but boys had higher scores when mean scores are taken into consideration. This difference may have arisen from play partners and/or type of activity. It was suggested that girls have higher scores in terms of social spontaneity (Gür et al., 2015); however, children who play as if with children in same gender are evaluated as more competent by their teachers (Colwell & Lindsey, 2005). Goble, Martin, Hanish, and Fabes (2012) indicated that girls show more

masculine activities when they play with male peers, while boys show more feminine activities when they interact with their teachers. Although past research (Barnett, 1991b; Tae-Hyung et al., 2014; Zachopoulou et al., 2004) focused on the fact that gender has an effect on physical spontaneity in favour of boys, in this study, the gender variable was not found to have a significant effect on physical and cognitive spontaneity, manifest joy, or sense of humour variables. Considering that physical spontaneity consists of energy spending, physical difficulty, and risky behaviours, gender as an ineffective variable could be explained by risk behaviours related to gender and gender roles, evaluation of play as safe or not, and/or contextual factors related to play. Girls, when compared to (especially older) boys, rank the injury risk at a lower level (Hillier & Morrongiello, 1998), take more risks (Ginsburg & Miller, 1982), and experience more injuries. Some current research suggests that gender is not a determinant of risk behaviours but gender roles. For instance, Granie (2010) indicated that gender, age, and parent's masculinity and femininity evaluations have no effect on injury directed risky behaviours. However, masculinity scores predict injury-directed risky behaviours for both girls and boys. In this manner, physical spontaneity, which includes risk factors, could be different in the context of gender roles. When the finding that physical spontaneity does not differ in terms of gender is considered according to the frame of safety despite the risk, Hillier and Morrongiello's (1998) research could provide guidance. Hillier and Morrongiello (1998) showed that there is no difference between choosing safe or not safe situations in terms of gender. In addition, the characteristics of a play environment have an effect on risk level of play situations (Sandseter, 2009). Another finding of this study is that there is no difference between girls and boys according to cognitive spontaneity scores. There is no agreement in the literature on whether gender is a distinguishing variable in terms of manifest joy variable; Barnett (1991b) indicated that girls have higher scores than boys on cognitive spontaneity, while several researches (Tae-Hyung et al., 2014; Zachopoulou et al., 2004) showed similar findings with the current study. However, there are controversial findings in the literature for the manifest joy and sense of humour research. Barnett (1991b) reported that boys have higher scores in manifest joy, although gender made no difference in sense of humour. Zachopoulou et al. (2004) indicated that there was a difference between boys and girls in terms of manifest joy and sense of humour in favour of boys. Tae-Hyung et al. (2014) reported that they did not find any differences in manifest joy scores in terms of gender.

The fourth aim of the study is to examine whether birth order has an effect on general playfulness scores (physical, social, cognitive spontaneity, manifest joy, and sense of humour). In this study, the main effect of birth order was not found to be significant in terms of general playfulness scores. This result is not consistent with Barnett's (1991b) findings. Barnett found that birth order has a significant effect in terms of social and cognitive spontaneity, and sense of humour. The last child has the highest scores in terms of social spontaneity; the first, or the only, child has the highest scores in terms of cognitive spontaneity and sense of humour. Barnett (1991b) conducted this study in the first half of the academic year. Conversely, the data of the current study were obtained in the second term of the academic year. Therefore, teachers had more opportunity to observe children before they completed the scale for each child in their class and this may have caused a difference in the research findings. In addition, Bleske-Rechek and Kelley (2014), in their study investigating personality traits of first- and last-born siblings in a family, reported that birth order has no significant effect on the personality traits of siblings. Considering that playfulness is defined as an aspect of personality, this finding is consistent with Bleske-Rechek and Kelley's (2014) study. However, Rentzou (2013), in a research conducted with 158 children between 16 and 62 months (mean is 42.86 months), indicated that there is a significant positive relationship between all sub-dimensions of playfulness and birth order. This finding can be interpreted as when the birth order of the child is higher, playfulness sub-dimensions would be similarly higher.

The fifth aim of the study was to examine whether the number of siblings variable has an effect on general playfulness scores (physical, social, cognitive spontaneity, manifest joy, and sense of humour). Findings showed that the number of siblings has a significant effect on general playfulness scores; only social spontaneity, manifest joy, and sense of humour differentiated in the terms of the number of

sibling variable. When this finding is reconsidered for social spontaneity, children with one sibling have higher scores than children with two or more siblings. Yücel (2014) indicated that adolescents who have at least four siblings, compared to adolescents who are only children, have worse internalizing problem behaviours, self-concept, and focus of control. Downey, Condron, and Yucel (2015), in another study about numbers of siblings, compared social skills of children who have no siblings and those who have siblings. They found that only children have difficulty accumulating social skills. In this point, findings of the study by Downey et al. (2015) and Yücel (2014) are consistent with the finding in the current study that the social spontaneity variable differs in favour of children with one sibling. However, there was no difference in the social spontaneity scores of children without siblings, with one sibling or with more siblings in this study. Analysis of this situation in the context of the research indicated that the effect of birth space between siblings and genders of siblings (e.g. Minnett, Vandell, & Santrock, 1983) would provide an opportunity future research. Minnett et al. (1983) showed that children with closer birth spaces behave more aggressive to their siblings, while children with far birth spaces show more positive behaviour and develop intimacy. Simultaneously, children who have same-sex siblings, compared to children with opposite-sex, are more aggressive and subordinate. In this study, *Posthoc* comparisons for manifest joy showed a similar structure with social spontaneity; when manifest joy scores of children with one sibling and children with two or more siblings are compared, scores differed in favour of children with one sibling. This finding is partially consistent with Rentzou's (2013) research findings. Rentzou (2013), in a research conducted with 158 children in the range of 16–62 months (mean is 42.86), found that there is a significant negative relationship between number of family members and manifest joy scores. Thus, when the number of members in the family increases, manifest joy scores of children decrease. However, Rentzou's (2013) findings should be considered with the finding in this study that there is no significant difference between manifest joy scores of children without siblings and those of children with one or more siblings. When the findings of these two researches are reconsidered together, children who have more than one sibling could have lower scores on the manifest joy variable. In addition, the number of siblings variable accounts for only a 2% change in the manifest joy variable and this finding suggests that the number of siblings variable should be examined with different sub-variables (e.g. birth spaces between siblings, etc.) in order to obtain more information in terms of future research. Findings showed that another area in which the number of siblings has an effect is sense of humour. Accordingly, the sense of humour scores of children with no siblings, with one sibling and children with two or more siblings were found to differ. The sense of humour scores of children with one sibling and children with two or more siblings were different in favour of children with one sibling.

This study contributes to the understanding of children's playfulness. However, this study is restricted by gender, birth order, number of siblings variables. In the literature, there are findings demonstrating that birth spaces between siblings (age difference between siblings), gender of siblings, and family structure affect psychological situations and behaviors of individuals (Crowne et al., 2012; Nuttall & Nuttall 1979) and suggest that birth spaces, and number and gender of siblings must be controlled in research investigating the effect of birth order (Kidwell, 1981). In the light of this evidence, playfulness should be studied in the context of variables mentioned above. Considering the findings, gender is a prominent variable. Because of the inconsistence with the previous research findings. it is possible to open a new point of view about gender varieble which is adressed in children's playfulness: Examining whether gender roles differentiate between children's playfulness would contribute to have a deep understanding.

Besides this, it was not aimed to investigate the conceptual structure of children's playfulness, however, finding that the highest sub-dimension both for boys and girls is manifest joy generates the idea that the manifest joy sub-dimension is a core structure for playfulness. However, consistency and correlation coefficients in research findings recalls the criticism of Bundy and Clifton (1998) for the conceptualization of playfulness. Bundy and Clifton (1998) suggested that manifest joy is a contributing construct for playfulness. Future research could make clear this situation via testing the validity and reliability of CPS in different sample groups and different cultures.

Notes

1. Aguilar (1985) expresses as 'perception or attitude'.
2. Alpha significance level of *F*-test was determined as .025 for the related variables

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix

ÇOCUKLAR İÇİN OYNAMA EĞİLİMİ ÖLÇEĞİ (ÇOEÖ)

	Madde	Hiç bu çocuk gibi değil	Nadiren bu çocuk gibi	Kısmen bu çocuk gibi	Çoğunlukla bu çocuk gibi	Tamamen bu çocuk gibi
1	Oyun sırasında keyif aldığını yansıtır.					
2	Oyun sırasında fiziksel olarak aktiftir.					
3	Oyun sırasında canlı ve neşeli olduğunu gösterir.					
4	Oyun etkinlikleri sırasında hareketleri koordinelidir.					
5	Oyun sırasında coşkulu olduğunu gösterir.					
6	Oyun içinde sessiz/sakin olmak yerine aktif olmayı tercih eder.					
7	Mizahi/gülünç hikayelere güler.					
8	Oyun oynarken şarkı söyler ve konuşur.					
9	Diğer çocuklarla oyun başlatır.					
10	Diğer çocuklarla şakalaşmaktan keyif alır.					
11	Diğer çocuklarla işbirliği içinde oynar.					
12	Oyun sırasında diğer çocukların oyun çağrılarına kolaylıkla tepki verir.					
13	Oyun içinde çok fazla koşar (atlar, sıçrar, zıplar).					
14	Oyun malzemelerini/oyuncaklarını paylaşmaya isteklidir.					
15	Oynamak için kendi oyunlarını icat eder.					
16	Oyun saatinde oynadığı oyunu değiştirmek yerine, yalnızca bir oyun ile meşgul olur.					
17	Diğer çocuklarla oynarken lider rolü üstlenir.					
18	Eğlenceli hikayeler anlatır.					
19	Oyundayken diğerlerine nazik bir şekilde sataşır.					
20	Oyunda farklı karakterler/roller üstlenir.					
21	Oyunda soytarılık (gülünç/komik hareket ve davranışlar) yapıyor gibi görünür.					
22	Oyun sırasında duygularını yansıtma açısından tutuktur.					
23	Oyun sırasında alışılmadık nesneler kullanır.					