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Research Article

Adaptation of Modified Gamification User Types Scale into Turkish

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Abstract

Marczewski (2015) has introduced a new classification model for different user types. Tondello et al. (2016) developed and later revised (Tondello et al., 2019) "*The Gamification User Types Hexad Scale*" based on this model. The aim of this study is to adapt this scale into Turkish. The validity and reliability study of the scale was conducted on 330 university students. Confirmatory factor analysis (CFA) on the model also showed that the fit indices were acceptable. The Cronbach's alpha coefficients of the factors were also within the acceptable range. Additionally, it was found that there was a significant difference between the mean scores of the lower 27% and upper 27% groups for both the items and the sub-factor scores. As a result, it can be concluded that this valid and reliable scale composed of 24 items and 6 factors can be used as an effective tool in the gamification solutions considering the characteristics of the target group.

Keywords: gamification, player/user types, scale adaptation, validity, reliability

INTRODUCTION

Game is a process continuing throughout human life. People start playing games in their early ages with free-play activities and as growing they play rule-based games (Çelebi Öncü & Özbay, 2009; Thyssen, 2003). The games that were played in different ways were reshaped in the focus of the computer and the internet. It is estimated that people spend approximately 11% of their free time on video games (Flamberg, 2018). The widespread use of smartphones and the internet has led to the development of the digital game industry and the expansion of the players' age range (GIM, 2019). It has been reported that 94% of the users in Turkey play games at least once a week, while 53% of them play every day. The average playing time is 35 minutes per day (AdColony & Nielsen, 2019).

This evolution in the game industry influenced a large part of the society and made the games a natural part of human life (Schell, 2014). Games have always been interesting to humans as they meet basic psychological needs (Przybylski, Rigby, & Ryan, 2010). Many people who developed undisciplined actions against unpleasant situation present a surprising discipline when it comes to game play. Within this scope, games have important effects on keeping people busy for a long time, providing communication between players and building trust (Chou, 2016). It is thought that the use of games in different contexts will provide solution to many situations when a reluctant participation occurs (McGonigal, 2011).

While in the early times games were used as entertainment tools, today they are seen as the perfect tools that can be used to create behavioral change (Observatory of Educational Innovation, 2016). Thus, game designs have become valuable aspects so that they can be used to make non-game contexts more entertaining, more motivating and more engaging (Deterding, Khaled, Nacke, & Dixon, 2011). Educational environments also benefit from games to attract the attention of students (Crisp, 2014) who want to see entertainment and learning as a reward (Aybat, 2017; Prensky, 2002). In this sense, gamification is defined as the use of game design elements in non-game context (Deterding et al., 2011) offers important opportunities to make educational environments more exciting (Goehle & Wagaman, 2016; Hew, Huang, Chu, & Chiu, 2016; Kopcha, Ding, Neumann, & Choi, 2016).

Gamification

Commercial applications of gamification have increased the participation of people in sales activities (Deterding, Dixon, Khaled & Nacke, 2011; Werbach & Hunter, 2012). This allows customers to visit more shops to earn promotions, discounts and other rewards, or to receive more notifications via mobile applications (Zichermann & Cunningham, 2011). The successful applications of gamification combined with new technologies have led the idea that game elements can be used in educational environments (Lee & Hammer, 2011). Gamification has created high expectations for motivation and problem of participation in the educational environment. This expectation has brought the gamification to a new trend in this field (Johnson, Becker, Estrada & Freeman, 2014; Nacke & Deterding, 2017). Gamification in educational environments implies the use of game elements to encourage students to learn and solve problems through increasing their motivation and engagement (Kapp, 2012). It is aimed to increase the learning performance by reaching desired participation and motivation by incorporating the gamification into the learning environments (Domínguez et al., 2013; Hew et al., 2016; Kapp, 2012; Lee & Hammer, 2011; Yıldırım & Şen, 2019). In this context, gamification is used in order to make lessons more exciting and increase participation and motivation. (Darejeh & Salim, 2016; Dichev & Dicheva, 2017; Dicheva, Dichev, Agre & Angelova, 2015; Seaborn & Fels, 2015).

Gamification Design

Successful results of gamification does not mean that success will be achieved in every context (Fitz-Walter, Johnson, Wyeth, Tjondronegoro, & ScottParker, 2017; Glover, 2013). Gamification is not suitable for every learning situation (Kapp, 2012) and should not be expected to be successful if it is not used correctly (Glover, 2013). Although the opportunities offered by technology itself are an important factor, it is evident that they are not the main determinants of effective teaching (Clark, 1994). It is difficult to say that each game element will have same effect for each context and target group (Hamari, Koivisto, & Sarsa, 2014; Ibanez, Di-Serio & Delgado-Kloos, 2014). Individual differences and user preferences are an important factor affecting the success of gamification (Barata, Gama, Jorge, & Gonçalves, 2017; Mekler, Brühlmann, Touch, & Opwis, 2017; Orji, Nacke, & Di Marco, 2017). Therefore, user preferences are highly important for gamification designs (Darejeh & Salim, 2016).

The interest and expectation of each person is different (Chou, 2016). For some people intrinsic motivation is important, while for others external stimuli can be more determinant (Duy, 2017). In addition, the characteristics, needs, interests and values of learners are very important in terms of ensuring their motivation in learning environments (Senemoğlu, 2012). Recognizing and defining the users that constitute the target group take over a key role in the development of the gamification practices (Knutas et al., 2017; Kumar, 2013; Marczewski, 2015; Nicholson, 2012). As users have different perceptions and preferences (Gil, Cantador, & Marczewski, 2015; Jia, Xu, Karanam, & Voida, 2016; Orji, Tondello, & Nacke, 2018; Tondello et al., 2016), user preferences need to be at the center of the design and development process in order to develop more efficient gamification applications (O'Donovan, 2012). The applications which are developed by considering the characteristics of the target group rather than uniform designs will increase the success of the gamification (Mora, Tondello, Nacke, & Arnedo-Moreno, 2018; Tondello et al., 2016). On the other hand, recognizing the different impulses and interests of the participants will help to create an attractive environment for all students (Kim, 2015).

Knowing the characteristics of the target group is very important in order to interact with the users and developing long-term and effective designs (Marczewski, 2017). Therefore, it is seen that there is a tendency to design for that prioritized target group (Nacke & Deterding, 2017). Determining the types of players is planned in the context of the target audience analysis which should be done before the start of designing process (Doğan, Burmabıyık, & Şahin, 2017). It is also seen that the "Identification of users / players" stage take over an important role in the gamification design models and the development phase is formed around this step (Burke, 2014; Kumar, 2013; Marczewski, 2015, 2017; Werbach & Hunter, 2012). For this reason, before starting the gamification design, player/user types are determined to produce solutions that will meet the needs of the targeted audience.

Player / User Types

Different clustering techniques are used in marketing to define groups of people with different characteristics. People are clustered as geographical (continent, country, region, city), demographic (age, gender, job, social status, educational status), psychological (attitude, interest, value, lifestyle) or behavioral attributes (Hamari & Tuunanen, 2014). In the design of teaching processes, to reveal the characteristics of the target group classifications focusing on psychological and behavioral groupings are used rather than geographic or demographic attributes. There are different models in determining the types of actors in literature (Doğan et al., 2017; Hamari & Tuunanen, 2014). The types of players created by observing the behaviors of students who play MUDs (Multi User Dungeon) are the most known and the most preferred models in gamification solutions (Hamari & Tuunanen, 2014; O'Donovan, 2012; Yee, 2007; Yee, Ducheneaut & Nelson, 2012).

However, the model does not provide a way to determine the types of players. They are also criticized for being very strict and partly unsafe (Hamari & Tuunanen, 2014). As long as it is not based on experimental data, it is stated that it would be difficult to use Bartle's (1996) model in a practical way. Although Yee (2007) reconstructs the player types (killers, achievers, socializers, explorers) of Bartle (1996), it introduces a new taxonomy (achievement, social, immersion) and scale based on statistical data (Yee et al., 2012), but only evaluates players on RPGs (Role Playing Games) (Nacke, Bateman, & Mandryk, 2014). Therefore, it is stated that it is not very suitable for different types of games, especially for gamification (Busch et al., 2016; Marczewski, 2015). Gamification is similar to games in terms of game design elements, but it is used in different fields (health, marketing, trade, education, etc.). The player types vary in different contexts and the target group of gamification does not always consist of people playing games (Hamari & Tuunanen, 2014). However, in designs which these classifications are used, users are considered as a player and the used gamification design is shaped according to the player type (Doğan et al., 2017). So, Marczewski (2015) has introduced a new classification model for different user types that includes different game elements. In the field this is the first model that classifies user types to design of gamification systems (Diamond, Tondello, Marczewski, Nacke, & Tscheligi, 2015).

Marczewski's User Types Hexad

Marczewski (2015) has revealed a new classification (User Type Hexad) by further expanding and elaborating the player types of Bartle (1996). In this context; achiever, socialiser, philanthropist and free spirit are the four basic types of users that are nurtured by intrinsic motivation. The player that will react to all the gamification is the external motivation user type. There is also a different type of user called disruptor which tries to distribute the system.

Deci and Ryan's (1985) Self-Determination Theory and Pink's (2009) Drive theory, which meets the basic human psychological needs of humans, are the basis for the motivation behind this framework. The individual's self-sufficiency, desire to do the work best, and the need to maintain relationships based on trust and satisfaction with other people are the basis of self-determination theory. According to this theory; the people's autonomy, competence and relatedness needs motivates them internally (Deci, Koestner, & Ryan, 2001; Deci, Vallerand, Pelletier, & Ryan, 1991; Ryan & Deci, 2000). Pink (2009) has three main components in Drive theory: (1) Autonomy (i.e., the desire of people to manage their life), (2) mastery (i.e., the desire to

achieve better in a subject), and (3) purpose (i.e., the desire to serve a larger phenomenon is the main structure of the theory) (Pink, 2018).

The Purpose of Study

Marczewski (2015) offers six different types of users within the framework of user types and proposed different strategies (mechanics, components and ideas) to motivate each type. Although there is a good correlation between these types of users and the proposed strategies (Gil et al., 2015; Orji et al., 2018; Tondello et al., 2016), there is no standard method for identifying user types. Tondello et al. (2016) developed and then revised (Tondello et al., 2019) a scale of six user types in gamification based on statistical data to score user preferences. This is the first scale in literature to classify user types for gamification systems design. It is seen that gamification is a new trend (Darejeh & Salim, 2016; Dichev & Dicheva, 2017; Dicheva et al., 2015; Seaborn & Fels, 2015; Surendeleg, Murwa, Yun, & Kim, 2014) and nowadays there is a tendency towards the design of gamification (Nacke & Deterding, 2017).

Although Akgün and Topal (2018) conducted the adaptation of the scale to Turkish, they used the first version proposed in CHI PLAY'16 conference by Tondello et al. (2016). Therefore, they had to remove some items from the scale due to the weak load values and high error rates. In the first version of the original scale some items which belong to the philanthropist, free spirit and achiever user types give more load values than acceptable level for more than one factor. In addition, the reliability coefficient (Cronbach's $\alpha = 0.689$, <0.70) of the player type factor is low and the model fit analysis was not done. Therefore, Tondello et al. (2019) conducted two new studies using the first version of the scale. Based on the data of these two new studies, they have modified some items in order to correct the weak part of the scale and increase the reliability. The weak items of the achiever type have been modified in the theoretical framework to better identify the users' preferences of improve their ability and overcome difficult situations. A short, indeterminate and weak item of the free spirit user was replaced by a new item on self-expression. Based on the evidence obtained from the new validity study of the scale, Tondello et al. (2019) recommend researchers to use the revised scale for future gamification studies. Therefore, a new adaptation study is needed. In this context, the aim of this study is to examine the validity and reliability of the Turkish adaptation of The Gamification User Types Hexad Scale which was revised by Tondela et al. (2019). This is the first scale which was developed to classify user types in the design of gamification, so we believe that it will make a significant contribution to gamification studies in Turkey.

METHOD

Before starting the language equivalency process, which is the first step of scale adaptation studies, an electronic permission was obtained from Gustavo Fortes Tondello, who is the developer of the scale. Scale adaptation study includes translation of items from the original language into Turkish, evaluation of translated items and development of the draft form, language equivalency, the validity and reliability process of the new form (Savaşır, 1994).

The item translation is one of the most important steps in the scale adaptation (Savaşır, 1997). The translation of the original language into Turkish was done using the Single-Translation Method (Hambleton & Bollwark, 1991). A group of translators translated the scale from the source language into the target language and then the translations were examined by a different group of translators. The scale was independently translated into Turkish by the researcher himself, faculty members from the Department of English Language (2 people) and teachers (2 people) from the Ministry of National Education, totaling of five different people.

The translations were then revised by two Turkish teachers and one English teacher working for the Ministry of National Education, two instructors working in the Department of English Language and Literature, two instructors working in the Department of Turkish Language and Literature. When evaluating the translations, the focus was on meaning rather than verbatim. The most appropriate sentence structure in the target language was preferred. Words such as wellbeing, status quo, rebel, independent and provoke in the items

were expressed in the theoretical framework in accordance with Turkish culture. Expert Evaluation Form (EEF) was created to evaluate the translation in terms of words, concepts and expressions.

The scale was finalized in correspondence with the data obtained from the EEF and the feedback received from the experts. The consistency between the draft form (Turkish) and the original scale (English) was statistically tested by the equivalency study. Both the original of the scale and the prepared draft form were applied with a one-week interval to a group who were competent in two languages in order to test whether or not the items were equivalent to the original scale. Collecting data from the same group for the both forms eliminates the differences in comparison (Savaşır, 1994). After language equivalency the scale was applied to the study group for the validity and reliability.

Study Group

The language equivalency study of the draft form, which was translated from the original language into the target language, was applied on 20 senior students studying in the Department of English Language and Literature of at a public university. The validity and reliability study of the new form was carried out in the fall semester of 2019-2020 academic year in four different public universities. The study group was determined using convenience sampling method, and consisted of 330 students from nine different departments of five faculties. It is suggested that the sample size should be large enough to ensure that the relationships can be reliably estimated (Büyüköztürk, 2002). For minimum sample size in factor analysis there are various recommendations ranging between 100 and 250 (Preacher & MacCallum, 2002). Field (2018) also states that 300 participants are needed for a reliable factor analysis. The number of the participants in the current study was considered appropriate for factor analysis. **Table 1** shows the demographic information of the study group.

Table 1. Demographic Information of the Study Group

	N	%
Gender		
Female	219	66.4
Male	111	33.6
Education Level		
Associate degree	30	9
License	300	91
Age		
15-20	176	53.3
21-25	142	43.1
26-30	5	1.5
31-35	5	1.5
36+	2	0.6
Total	330	100

Data Collection Tool

The scale was developed by Tondello et al. (2016) and then revised (Tondello et al., 2019) which was developed to determine the types of users in gamification and based on the user types framework of Marczewski (2015). The original language of the scale is English. Scale items have been created to define each type of user by six people who are experts in game mechanics and scale development (Tondello et al., 2016). Later, some items in the scale were changed in the new study (Tondello et al. 2019). The scale examined by exploratory factor analysis explains 61.9% of the total variance. The RMSEA (0.062), GFI (0.981) and SRMR (0.0430) fit indexes show that the model has good fit. The Cronbach alpha internal consistency coefficients for the reliability of the original scale are for socialiser 0.788, for philanthropist 0.704, for the free spirit 0.596, for the achiever 0.711, for the disruptor 0.700 and for the player 0.748. Reliability and factor analysis results show the structural validity of the scale. The scale is suitable for determining the user types in gamification and for developing personalized gamification designs (Tondello et al., 2019).

The opinions about the appropriateness of both the scope and the Turkish culture were collected with the EEF. The EEF consists of an evaluation paper that introduces the study and includes the theoretical information about the structure of the scale and the evaluation section for each item. The form contains both original and translated items. The experts were asked to indicate on the 3-point Likert-type scale that the options for eligibility of items. If necessary, it was stated that they can make corrections on the items and a comment can be written. The created EEF was sent to experts, they are in the field of educational technologies, and knowledgeable about gaming and gamification, and have experience in both cultures.

Data Analysis

Descriptive analysis (percentage and mean) was performed with the data collected by EFF to evaluate the translation in terms of words, concepts and expressions. The correlation between the total and sub-factor scores obtained from the original and draft form was examined. Confirmatory Factor Analysis (CFA) was performed to obtain evidence of construct validity of the scale and to confirm the factors in the original form. The relationship between predetermined variables by a model or theory is tested by CFA (Tabachnick & Fidell, 2001). The Chi-Square Goodness of Fit (χ^2), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Non-normed Fit Index (NNFI), Incremental Fit Index (IFI), Standardized Root Mean Square Residuals (SRMR) and Root Mean Square Error of Approximation (RMSEA) have been examined to assess the model fit (Çokluk, Şekercioğlu, & Büyüköztürk, 2016).

In order to determine the reliability of the scale, Cronbach alpha internal consistency coefficient was examined. The item-total correlation was examined, and the t-test is used to determine whether the difference between the item scores of the lower and upper groups is meaningful. In addition, the correlations between the factors were calculated by Pearson Moments Multiplication Correlation analysis. Finally, the factor point means and standard deviation values of the scale and the distribution of the participants were determined according to the types of users determined by the scale. Reliability analysis and correlation were performed with SPSS 21.0 and confirmatory factor analysis was performed with Lisrel 10.10 program.

RESULTS

Expert Evaluation and Language Equivalency Study

The data collected from five different experts via EEF were found to be suitable in all items at the rate of 80% or more (**Table 2**).

Table 2. Expert Evaluation Form (EEF) Item Means

Item	$\bar{X}$	%	Item	$\bar{X}$	%
Item 1 (p1)	2.8	94.4	Item 13 (p2)	2.6	88.9
Item 2 (f1)	2.8	94.4	Item 14 (s3)	3	100
Item 3 (r1)	3	100	Item 15 (r4)	2.8	94.4
Item 4 (a2)	2.8	94.4	Item 16 (f2)	2.8	94.4
Item 5 (s1)	2.8	94.4	Item 17 (a3)	3	100
Item 6 (f2)	2.8	94.4	Item 18 (p3)	2.8	94.4
Item 7 (r2)	2.8	94.4	Item 19 (f4)	2.8	94.4
Item 8 (d1)	2.8	94.4	Item 20 (d4)	3	100
Item 9 (s2)	3	100	Item 21 (s4)	3	100
Item 10 (d2)	2.6	88.8	Item 22 (a4)	3	100
Item 11 (a2)	2.5	83.3	Item 23 (r4)	2.8	94.4
Item 12 (d3)	2.6	88.8	Item 24 (p4)	2.5	83.3

s =socialiser, p = philanthropist, f = free spirit; d = disruptor, r = player, a = achiever

A statistical evaluation for language equivalency was made on the scores of the students who responded to both forms (**Table 3**).

Table 3. Comparison of Total and Sub-factor Scores of Original and Draft Forms

Draft Form/Original Form	N	r	p-value
Socialiser	20	0.824	0.000
Philanthropist	20	0.813	0.000
Disruptor	20	0.830	0.000
Player	20	0.876	0.000
Free spirit	20	0.788	0.000
Achiever	20	0.706	0.001

When **Table 3** is examined, it is seen that there is a high level positive and significant relationship between both total scores and sub-factor scores of the draft and original form ($p < 0.01$). These results show that the original scale and the draft form are indeed equivalent.

Confirmatory Factor Analysis

For the adaptation study of the scale consisting of 6 factors and 24 items, a CFA was performed to examine the extent to which the model complied with the collected data. The corrected item-total correlations values were between 0.343 to 0.626 and all items in the scale were above 0.30 (see **Table 6**).

The factor weights of items ranged from 0.40 to 0.72. The error variances ranged from 0.46 to 0.84 and all items were smaller than 0.90 (**Figure 1**). The items have values ranging from 6.54 to 13.67 (> 2.56) and significant at 0.01 (**Figure 2**).

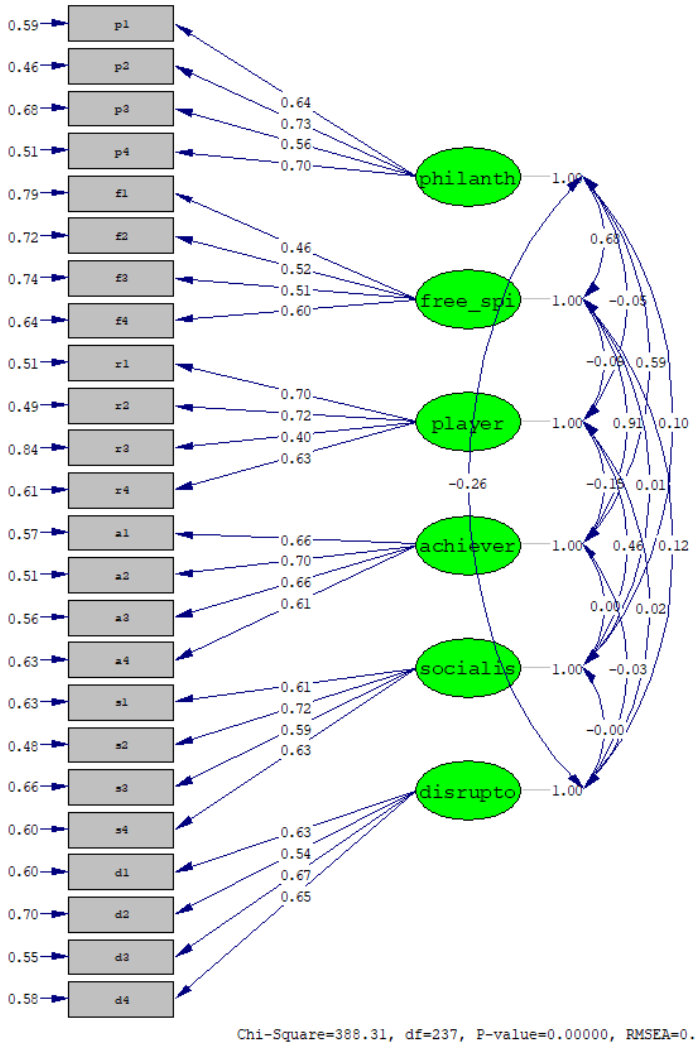

Figure 1. Confirmatory Factor Analysis Connection Diagram (Standard Coefficients)

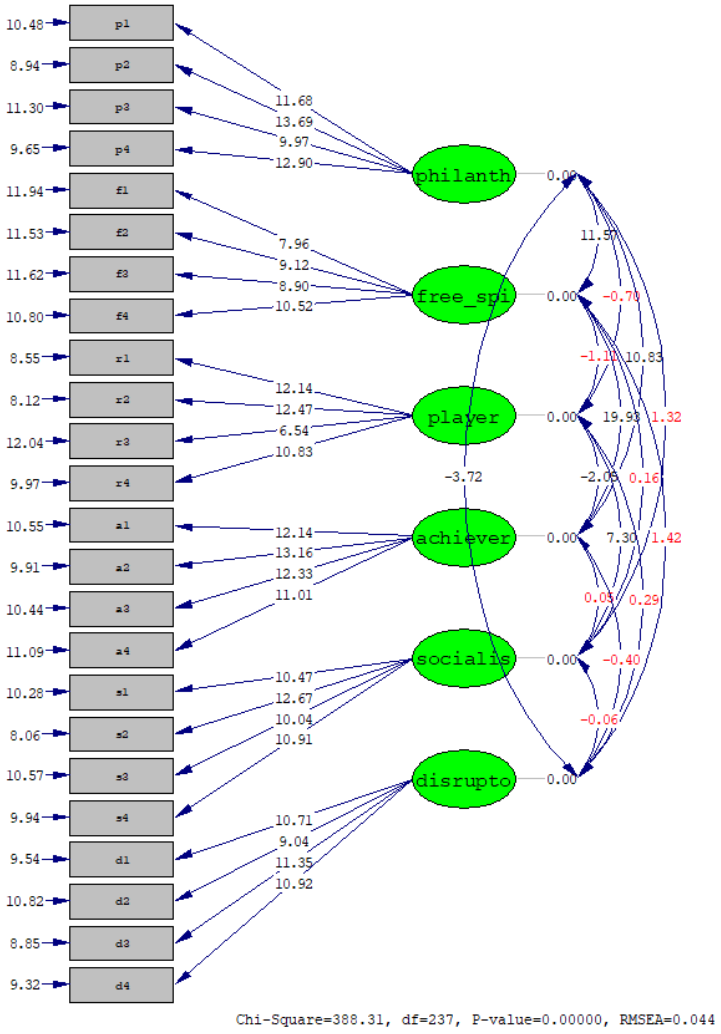

Figure 2. *Confirmatory Factor Analysis Connection Diagram (t-values)*

The difference between the expected and observed covariance matrixes are significant at 0.01 level (χ^2 = 388.81, *N* = 330, *SD* = 237, p < 0.001). It is stated that p value may be significant if the sample is large. Therefore, it is recommended to look at the χ^2/sd ratio (Sümer, 2000). The calculated χ^2/sd value was 1.63. Being below three (≤3) indicates that this value is perfect fit (Sümer, 2000; Tabachnick & Fidell, 2001). All goodness of fit values are presented in **Table 4**.

Table 4. Goodness of Fit Values

Fit Index	Perfect Fit Values	Acceptable Fit Values	Values From CFA
χ^2/sd	χ^2/sd ≤ 3	3<χ^2/sd≤5	1.63
RMSEA	0 ≤ RMSEA ≤ 0.05	0.05 < RMSEA ≤ 0.08	0.04
S-RMR	0 ≤ S-RMR ≤ 0.05	0.05 < S-RMR ≤ 0.08	0.05
NFI	0.95 ≤ NFI ≤ 1	0.90 ≤ NFI < 0.95	0.82
NNFI	0.95 ≤ NNFI ≤ 1	0.90 ≤ NNFI < 0.95	0.90
CFI	0.95 ≤ CFI ≤1	0.90 ≤ CFI < 0.95	0.92
GFI	0.95 ≤ GFI ≤ 1	0.90 ≤ GFI <0.95	0.91
AGFI	0.95 ≤ AGFI ≤ 1	0.90 ≤ AGFI < 0,95	0.88
IFI	0.95 ≤ IFI ≤1	0.90 ≤ IFI < 0.95	0.92

The fit values are based Brown (2006), Hooper, Coughlan, and Mullen (2008), Jöreskog and Sörbom (1993), Sümer (2000), Tabachnick and Fidell (2001)

Looking at the fit index RMSEA value of 0.04 indicates perfect fit (Jöreskog & Sörbom, 1993). The S-RMR value of 0.05 (≤ 0.05) indicates the perfect fit (Brown, 2006). The 0.91 values for GFI indicate (≥ 0.90) that the model provides good fit (Hooper, Coughlan, & Mullen, 2008). Also, the values of CFI = 0.92, IFI = 0.91 and NNFI = 0.90 indicate (< 0.95) that the model has good fit (Sümer, 2000). Although the values found in AGFI (0.88) and NFI (0.82) are not within the acceptable compliance range, it is seen that they are very close to the limit values (Hooper, Coughlan & Mullen, 2008; Sümer, 2000). Since the S-RMR, RMSEA and CFI values were in the acceptable range, there was no need to look at the modification recommendations.

Reliability Study

In order to calculate the reliability of the factors in the model, Cronbach alpha internal consistency coefficient was examined. The Cronbach alpha values of the factors varies between 0.615 and 0.759. Reliability coefficients of factors other than free spirit are higher than 0.70, and are considered sufficient for reliability (Büyüköztürk, 2002). Although the reliability coefficient (0.615) of the factor belonging to the free spirit user type was less than 0.70, it was observed that the Cronbach alpha value of this factor was also low on the original scale (0.596). The Cronbach's alpha values, which are calculated for the Turkish version of the scale and specified for the sub-factors of the original scale, are shown in **Table 5**.

Table 5. Cronbach Alpha Coefficients

Factor Name	Cronbach's Alpha Values	
	Turkish	Original
Socialiser	0.727	0.788
Player	0.711	0.748
Philanthropist	0.756	0.704
Free spirit	0.615	0.596
Achiever	0.759	0.711
Disruptor	0.713	0.700

Item Analysis

Corrected item-total correlations were calculated in order to examine how sufficient the items in the model on distinguishing people. Independent t-test was used to test the significance of the difference between the mean lower 27% and upper 27% mean scores for each factor.

Table 6 shows that the corrected item total correlations of all items in the scale are above 0.30 and their values vary between 0.343 and 0.626. A significant difference was found for items and sub-factor scores between the upper 27% and the lower 27% group ($p < 0.001$). Accordingly, it can be said that all items are high in reliability, and they are measure the same behavior (Büyüköztürk, 2002). **Table 7** also provides additional information regarding the factor name, total number of items, factor average, standard deviation and the correlation between the scales mean scores.

Table 6. Corrected Item-Total Correlation and t-test Results for Comparison of Lower 27% and Upper 27% Item Scores

Factor name	Item	Corrected Item Total Correlation	t (lower %27- upper %27)
Socialiser	s1	0.530	13.482
	s2	0.583	16.460
	s3	0.475	12.939
	s4	0.488	15.673
Player	r1	0.513	15.452
	r2	0.578	16.809
	r3	0.403	6.558
	r4	0.506	15.279
Philanthropist	p1	0.573	8.704
	p2	0.591	15.773
	p3	0.448	12.225
	p4	0.626	13.344
Free spirit	f1	0.399	8.537
	f2	0.343	12.541
	f3	0.436	8.957
	f4	0.438	11.693
Achiever	a1	0.578	16.072
	a2	0.595	16.746
	a3	0.545	11.929
	a4	0.541	9.546
Disruptor	d1	0.505	14.127
	d2	0.468	17.528
	d3	0.518	20.793
	d4	0.509	16.472

Table 7. Average, Standard Deviation and Correlations Between Factor Scores

	N	$\bar{X}$	SD	Correlations				
				s	f	p	a	d
Player (r)	4	22.73	3.98	0.262*	0.328*	0.226*	0.324*	0.081
Socialiser (s)	4	21.48	4.02	-	0.342*	0.461*	0.319*	0.094
Free spirit (f)	4	24.25	2.91	-	-	0.497*	0.639*	0.018
Philanthropist (p)	4	24.01	3.59	-	-	-	0.429*	0.208*
Achiever (a)	4	24.00	3.57	-	-	-	-	0.042
Disruptor (d)	4	13.17	5.42	-	-	-	-	-

*N = Number of items, $\bar{X}$ = mean, SD = standard deviation, *p < 0.01*

The correlation coefficients and significance levels between the user types shown in **Table 7** are similar to the original scale study. It has been observed that there is a weak correlation (< 0.30) between the disruptor and other types. Also, there is a weak correlation between player and socialiser (< 0.30) and player and philanthropist (< 0.306). There has been a moderate (< 0.70) correlation between the other species. The average scores and standard deviations of each species according to the original and adapted scale are shown in **Table 8**.

Table 8. Average Scores and Standard Deviation for each User Type

	Original Scale		Adapted Scale	
	$\bar{X}$	SD	$\bar{X}$	SD
Socialiser	20.98	4.37	21.48	4.02
Player	20.66	4.44	22.73	3.98
Achiever	24.26	3.00	24.00	3.57
Philanthropist	23.68	2.93	24.01	3.59
Free spirit	23.45	2.95	24.25	2.91
Disruptor	16.72	4.68	13.17	5.42

The achiever, philanthropist and free spirit types have a high average score. Player and socialiser follow them. The disruptor has a very low average score. The mean scores are similar to the original scale.

DISCUSSION, CONCLUSION, RECOMMENDATIONS

The current study focused on the validity and reliability study of a gamification scale developed by Tondello et al. (2016) based on the user types framework of Marczewski (2015) and then revised according to Tondello et al. (2019). According to Geisinger (1994) differences in scale and adaptation studies are based on discrepancies in culture and language between the original form and the adapted form. Therefore, the translation process of the scale was carried out with care. The focused was on meaning rather than verbatim. The idioms and words are expressed in sentence structures to appropriate for Turkish language. The results of language equivalency resulted in a positive and significant relationship between the mean scores obtained from the draft and original form. Confirmatory Factor Analysis (CFA) was performed to obtain as an evidence of construct validity of the translated scale and to verify the factors in the original form. As a result, this valid and reliable scale can be used to determine the user types of individuals in Turkish culture. This scale can be used as an effective tool in the gamification solutions considering the characteristics of the target group. Tondello et al. (2019) recommends to use the revised scale for future gamification studies.

It is stated that the original scale works well for all ages (17-65). The scale consists of 6 factors and 24 items. Each factor in the scale is represented by four items. Although Akgün and Topal (2018) removed two items for the first version of the scale, in this study where the revised scale was adapted, no item was excluded. There is no negative item in the scale. The scale is intended to identify situations that motivate users in the context of gamification rather than determining the preferred game elements. Individuals mark the level of participation for each expression in the scale from “strongly disagree” (1) to “strongly agree” (7) from the 7-point Likert-type scale. Also, in order to use the scale, users do not need to play games, neither be aware of game preferences nor know the terms of the game design because of the scale’s sentences are consists from general statements, not special terms. Maybe the total point obtained from the scale does not make any sense to users. But the factor with the highest mean score obtained from the scale determines the type of the user. The score obtained by the user from a factor and the total points that can be taken from the factor are measured and the percentage of the user represents the user type. Since these users can also accommodate the characteristics of other type, all factor means can be measured and the relationship of the user with other types can also be demonstrated. The gamification elements (Marczewski, 2015) to be used in the design are determined according to the ratio of user types.

In such classifications, users do not belong to a clear type, but also may have the characteristics of other types (Bartle, 1996; Marczewski, 2015). The type of users are determined by the predominant characteristics (Doğan et al., 2017). Thus, player types should be understood as categories that represent a type of player with specific motivation and behavioral status that is stronger than other types (Hamari & Tuunanen, 2014). The fact that the motivation and behavioral states grouped with the player types are close to each other may have some difficulties in distinguishing them and matching them with the design elements, but this does not mean that the classification is useless. Determining the interests, goals and characters of the students through user types is very important to be able to direct the environments developed for education (Doğan et al., 2017).

With the gamification, it is aimed to provide motivation for the users to reach a specific target (Nicholson, 2012; Zichermann & Cunningham, 2011). Although the gamification ground is based on motivation, it is stated that the studies showing the effect of the intrinsic and extrinsic motivation providers in the gamification system are very few (Seaborn & Fels, 2015). It appears that the effect of gamification on individuals at different levels of motivation is yet to be understood (Perryer, Celestine, Scott-Ladd, & Leighton, 2016). Moreover, the relation between the elements of gamification and the types of motivation is not clearly established (Hamari et al., 2014; Perryer et al., 2016). However, it is stated that we still know very little about the effects of the gamification designs created by considering the player/user types (Nacke & Deterding, 2017). Today we are mostly seeing a tendency towards design studies (Nacke & Deterding, 2017), but these studies generally use models which developed for online games. However, the target group

of gamification does not always consist of people playing games. The model based on this adapted scale is the first model to classify user types according to intrinsic and extrinsic factors for the design of gamification systems. This scale which will be used in the context of target group analysis of gamification designs, will make a significant contribution to the future studies.

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