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RESEARCH ARTICLE

Physical Activity Involvement and Children with Autism Spectrum Disorder: Turkish Validity and Reliability of Parent-Reported Involvement Scale

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Abstract
The aim of this study was to test Turkish the validity and reliability of Parent-Reported Involvement Scale: PRIS, and to determine activity involvement level of children with autism who have training table tennis as physical activity. Data were collected from 126 parents who have a child with autism. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were respectively used to test factor structure of the scale in Turkish language. The structure with 3-factor of the scale was analyzed by the Maximum Likelihood and Cronbach's alphas was calculated for the subscales to evaluate its internal consistency. In addition, correlation between factors were examined with Pearson Correlation Analysis. According to conducted EFA results, the model consisted of 3 subscales. The CFA results proved that model fit indexes (χ^2/df= 2.05, GFI= .88, CFI= .88, NFI= .91, SRMR= .09, RMSEA= .09) were within perfect compliance limits with acceptable and supported 3-factor structure of the scale. In addition, the factor loadings of the scale ranged from .48 to .98 and the Cronbach Alpha reliability coefficients were respectively measured as .87, .86, and .87 for "interest intensity", "social bonding" and "identity expression" sub-dimensions. According to the results obtained, it could be assumed that structure with the 3-factor of the PRIS was a valid and reliable measurement tool todetermine level of leisure involvement of children with autism towards leisure activity. Consequently, it may think that PRIS could be used in Turkish samples in the future research with autism children.

Keywords
Autism, Involvement, Leisure, Reliability, Validity

INTRODUCTION

The conceptual structuring of involvement insocial psychology has caused social sciences to be discussed with different dimensions in marketing, consumer behavior and advertising, which are closely related to human behavior and attitudes, especially between 1965- 1980 (i.e., Sherif et al., 1965). Therefore, each discipline has developed different definitions and classifications of involvement according to its own perspective and research focus. With therapid development of recreation in the world economy and it beginsto be perceived as a consumption-basedproduct model in thelives of societies (Odabası& Baris, 2002), leisure literature began to address involvement in the mid-1980s (Decloe et al., 2009; Havitz & Dimanche, 1997).

Involvement, which is defined as the attitudes that an individual learns and develops through her link to her social environment, has been frequently used by leisure researchers to determine which stimuli are more important or meaningful to people (Reyes Uribe, 2017; Sherif

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et al., 1965; Kyle, 2001). The studies (i.e., Hammer & Sauter, 2013) have released that it is necessary to determine what kind of benefits activities provide to individuals to understand more clearly the reasons why people are interested in activities. Participation in an activity, especially by physical activities, provides numerous benefits to individuals in many aspects such as physiological, mental, social (Deneau et al., 2019; Izenstark & Ebata, 2019) and influence positively on especially their healthiness levels (Broughton et al., 2017). Therefore, research has proved that participation in leisure activities, which is regarded as a personal experience (personal relevance) for each person (Cockerill, 1995) is directly affect even the life satisfaction which is defined as satisfaction with people's lives (Diener et al., 1985; Driver, 1997).

For this reason, it has been extremely effective in increasing the number of studies in different culture and sample groups in leisure literature that participation in leisure activities contribute to the life of individuals(i.e., Akyüz, 2020; Gurbuz & Henderson, 2014; Gurbuz & Henderson, 2013; Kara et al., 2019; Kim % Park, 2018; Yaşarturk et al., 2020; Zhou, 2010). Leisure activities have been known as an important position for autism spectrum disorderlikein all individuals (Hollander & Nowinski, 2003). Especially, participation in leisure physical activity contributes positively to the social development of individuals with ASD and reduces their stereotyped behaviors (Orsmond et al., 2004).Numerousstudies have proved that individuals with ASD have improvements in their general health status, behavioral disorders, and motor skills with physical activity (Bremer et al. 2016; Lang et al., 2010)

It is not always possible to evaluate the behaviors, preferences, or reasons of psychological involvement of children with ASD, which is neuro developmental disorders. Therefore, Sheldrick et al. (2012) mentioned three methods that should be considered when evaluating the involvement of children with ASD in a certain physical activity. These are respectively as follows; (I) self-report, which a child give answer about their own involvement; (II) standard parent report, which a parent give answer about to what extent the child's involvement perceive; and (III) parent proxy report, which parents are asked to foresee what kind of response they can give when it comes to their children's direct involvement. Although it is thought that the best way to collect information from children with disabilities is through self-report (Sheldrick et al., 2012), recently it has been asserted that it is possible to evaluate the behaviors, preferences, or reasons for psychological involvement of children with ASD towards leisure activities due to their neurodevelopmental disorders with a parent-report.Consequently, our study's purpose was to test the Turkish reliability and validity of the "Parent-Reported Involvement Scale: PRIS", which was developed to determine the involvement level of children with ASD towards table tennis training program as physical activities.

Conceptual backgroun

The development process from modified involvement scale: MIS toparent-reported involvemen tscale: PRIS

In leisure literature, the first studies on leisure involvement have been focused more on scale development (Kyle et al., 1999). Consumer Involvement Profile: CIP (Kapferer and Laurent, 1985a) and The Personal Involvement Inventory: PII (Zaichkowsky, 1985) have been preferred to evaluate the level of individuals' involvement about recreational activities in the first scales developed (Havitz& Dimanche, 1997, Kim et al., 1997; McIntyre, 1989). However, different studies have been carried out later by developing different measurement tools (Havitz et al., 1993; Kyle et al., 2007).

The process of the personal involvement inventory: PII

Zaichkowsky (1985) posited that a person's involvement falls into three categories. These are I) personal: featuring inherent interests, values or needs that motivate one toward an object, II) physical: occurring when characteristics of the object cause differentiation and increase interest and III) situational: which is when something temporarily increases the relevance toward an object. A scale was developed from these three aspects of involvement, utilizing twenty pairs of words describing an object. The pairs of adjectives are designed to be indicative of high and low states of involvement (e.g., trivial: fundamental; and boring: interesting). Respondents were asked to react to the semantic differential between the words and select the point on a seven-point scale where their opinion falls. The sum of their responses could be calculated to produce an engagement score for each person.

The PII provides a unidimensional understanding of an activity's importance on a continuum of low to high.

The PII has entered the leisure literature with Celsi and Olson's (1988) inquiry into involvement and consumers' reaction to promotional materials targeted at tennis players. Though early leisure involvement research regularly employed the PII and related scales (Backman & Crompton, 1989; Bloch et al., 1989, Havitz et al., 1993; Jamrozy et al., 1996; Kim et al., 1997; McCarville, 1991), it has become overlooked for the multidimensional CIP in time (Havitz et al., 1993; Havitz& Dimanche, 1997). After assessing 50 involvement studies published from 1988 to 1997, Havitz and Dimanche (1997) have determined that the multidimensional CIP has been preferable to the unidimensional PII citing stronger content and face validity. However, even recent inquiries into leisure involvement have utilized the PII for its simplicity (Laverie& Arnett, 2000).

Consumer involvement profile: CIP

Kapferer and Laurent (1985a, 1985b), who have accepted involvement as a crucial variable in consumer behaviors, developed the CIP French Form, which is a multidimensional structure and based on Rothschild's (1979) work, to comprehend the relationship of product and consumer much better. CIP, which can be used to determine not only the level of consumers' involvement but also the person-to-person differences in their involvement patterns, has five dimensions serving as antecedents of involvement: 1) sign: the symbolic value of the consumer towards the product or its consumption and its purchase. 2) pleasure: the emotional appeal of a product, its hedonic value, and its ability to provide affect, 3) importance: the importance of the product to the customer's perception of the product, 4) risk importance: the importance of negative consequences experienced after the customer purchases the product, and 5) risk probability: the probability that the customer chooses a product with negative characteristics. Evaluated many times in the consumer marketing literature (Higie& Feick, 1989; McQuarrie & Munson, 1987; Mittal, 1995), CIPwas first translated into English by Jain and Srinivasan (1990), then later Rodgers and Schneider (1993). Finally, it appeared to result in a four-dimensional structure. After these studies, Dimanche et al. (1991) thought that CPI was also suitable for leisure literature; some researchers have stated that new measurement tools which includes the properties of leisure literature is needed instead of directly using such scales for leisure research (Chang & Gibson, 2011, Kyle et al., 2007, McIntyre, 1989).

McIntyre (1989) proposed a recreation-based involvement profile that consists of four sub-dimensions: centrality to lifestyle, importance, self-expression, and pleasurein the research regarding campers. Pleasure and importance dimensions are the same as Kapferer and Laurent's dimensions in PII, while the self-expressionis close to the sing dimension of CIP (Ridinger et al., 2012).In addition, the centrality to lifestyle dimension was also included in the study since personal interest/relevance has been accepted as an important element in leisure activities (Wellman et al., 1982), but risk consequence and risk probability dimensions were not included in the model without any explanation. McIntryre (1989) removed the risk dimension and included the centrality to lifestyle dimension in the study and brought a new consumer behavior scale to the literature that can be used to research the relationship between involvement and leisure.However, with the second factor analysis performed by McIntyre and Pigram (1992), the items in the pleasure and importance dimensions have been renamed as attraction because they were loaded on the same factor. As a result, McIntyre (1989), McIntyre and Pigram (1992) introduced a three-dimensional scale of involvement, namely self-expression, centrality, and attraction, into the leisure literature and used in the conceptualization of other studies. A Modified Involvement Scale: MIS developed by Kyle et al. (2007) has been one of them.

A modified involvement scale: MIS

MIS seen as an important advance in measuring leisure involvement, and it consists of five dimensions: attraction, centrality (McIntyre, 1989; McIntyre &Pigram, 1992), identity expression (Kapferer& Laurent, 1985a), social bonding, and identity affirmation. Researchers have included social bonding and identity affirmation as dimension because of measuring leisure involvementalongside of the three frequently used sub-dimensions (Kyle & Chick, 2002). Consequently, these items such as centrality, self-expression, and attraction have released different aspects of involvement. These three dimensions could be used in various fields as a means of creating a profile of individuals'

involvement (Wiley et al., 2000). However, by creating two different sub-dimensions from McIntyre's (1989) self-expression dimension, MIS has revealed a great conceptual change in the concept of involvement in the leisure literature and has been used by various researchers in recent years in creating an involvement profile for leisure activities (Arnberger et al., 2019; Jun et al., 2012; Williams, 2013).

Process of parent-reported involvement scale: PRIS

Developed over time with the contribution of various researchers to evaluate the involvement and personal meaning in various leisure activities such as exercise, fishing and video games, MIS was adapted by Hickerson et al. (2014) to determine the leisure involvement levels of children with autism, which is the marginal group. However, it is striking that three main changes were performed to the scale (I) most items on the scale have a "My child appears to..." expression because families filled the scale instead of children, and (II) The identity affirmation factor is not included in the scale. Kyle et al. (2007)'s instrument measures the extent to which an individual confirms his or her identity through participation. A parent could not evaluate this concept for their children. However, the outward expression or identity expression of identity associated with the activity could be observed by parents, (III) and lastly attraction and centrality factors of MIS are accepted as the only factor called interest intensity.

MATERIALS AND METHODS

Data collection and participant

The study was confirmed by Bartın University Social and Human Sciences Ethics Committee which is a recognized review board or ethics committee on February 09, 2023 (Approval no: 2023-SBB-0051).

The study group of the research consisted of 126 parents who have children with ASD. Characteristics of ASD were between the ages of 5-18 and participate in several physical activity training programs within a sport club in Ankara. The parents in this study group, which was created by using the criterion sampling method that is one of the purposeful sampling methods, were determined according to several criteria. In process of determining these criteria, the criteria such as that“the child with ASD is between the ages of 5 and 18”, “children with ASD have been involved in table tennis activity for a year or more” and “participate in this activity at least two days a week” were taken into consideration. A scale form consisting of personal demographic information and Likert type items was applied to the parents to investigate the table tennis behavior of children with ASD and to evaluate their children's perceptions of playing table tennis.

The average age of the parents participating in the study (M = 43.00, SD = 4.97), 84.9% of them were women, 95.2% were married, 83.3% were university graduates, and the average age of their children with ASD (M = 12.00, SD = 2.85), 84.9% of them were male, hours of weekly table tennis playing (M=10.00, SD=4.46), and 69.8% of them were found to have a moderate level of autism (see Table 1).

Table 1. Description of variables and participant characteristics

Continuous Variables	**M**	**SD**	**Min**	**Max**
Respondent age	43.00	4.97	56	32
Child age	12.00	2.85	5	17
Hours of table tennis played per week	10.00	4.46	4	25
Categorical Variables			**%a**	**%b**
Respondent sex (a=male; b=female)			15.1	84.9
Respondent status (a= single; b= married)			4.8	95.2
Respondent education (a=High school; b=University)			16.7	83.3
Child sex (a=male; b=female)			84.9	15.1
Child ASD classification (a= mild; b=moderate)			69.8	30.2

Note: M= mean, SD= standard deviation

Measures

Data collection tool

Parent-Reported Involvement Scale: PRIS adapted by Hickerson et al. (2014) was used. The scale, which it was tested whether the level of leisure involvement of children with ASD could be evaluated with the parent-report, measured using a Likert-type format where 1= Strongly disagree and 5= Strongly agree, PRIS is a scale that is 3 sub-dimensions and 12-items.

Process of scale's translation from English to Turkish

Translation and back-translation method were used to create the Turkish of the items in PRIS. At this stage, items in the original scale were translated into Turkish by 3 specialists in their English language field. Then later, these three forms translated were individually evaluated by 3 judges, the most appropriate of items were asked to mark by them. Traits of these judges were specialists in their scale adaptation study field and the level of their English is high. The Turkish form created at the end of this stage was later translated into English by an academic with a high level of English grammar, and its equivalence was tested with the original form. The pilot application of the Turkish form that was created because of all these stages was performed, the comprehensibility of items was reviewed, and the final scale form was composed (see Table 2).

Table 2. Items and factor domains in English and Turkish

English items and factor domains		Turkish items and factor domains	
Interest Intensity (II)		**İlgi Yoğunluğu (IY)**	
II_1	Table tennis appears to occupy a central role in the life of my child with ASD	IY_1	Masa tenisi, OSB'li çocuğumun hayatında merkezi bir role sahiptir.
II_2	Table tennis appears to be one of the most satisfying things my child with ASD does	IY_2	OSB'li çocuğumun yaptığı en tatmin edici şeylerden birisi masa tenisi oynamaktır.
II_3	My child with ASD appears to be genuinely interested in playing table tennis	IY_3	OSB'li çocuğum masa tenisi oynamakla gerçek anlamda ilgilenir.
II_4	My child with ASD appears to structure his or her daily routine around playing table tennis	IY_4	OSB'li çocuğum günlük rutinlerini masa tenisi oynayarak şekillendirir.
II_5	Table tennis appears to be very important to my child with ASD	IY_5	Masa tenisi, OSB'li çocuğum için çok önemlidir.
II_6	My child with ASD appears to invest most of his or her energy in table tennis	IY_6	OSB'li çocuğum, masa tenisi oynayarak enerjisinin çoğunu harcar.
Social Bonding (SB)		**Sosyal İlişki (Sİ)**	
SB_1	Table tennis provide opportunities for my child with ASD to be with acquaintances	$Sİ_1$	Masa tenisi, OSB'li çocuğuma arkadaşlarıyla bir rada olma fırsatı sağlar.
SB_2	Most of the acquaintances of my child with ASD play table tennis	$Sİ_2$	OSB'li çocuğumun arkadaşlarının çoğu masa tenisi ynar.
SB_3	My child with ASD appears to enjoy discussing table tennis with his or her acquaintances.	$Sİ_3$	anıdıkları ile masa tenisi hakkında tartışmak, OSB'li çocuğumun hoşuna gider.
SB_4	My child with ASD appears to prefer to be around others who share his or her interest in table tennis	$Sİ_4$	OSB'li çocuğum masa tenisine ilgisi olan kişilerle ir arada olmayı tercih eder.
Self-Expression (SE)		**Kendini İfade (Kİ)**	
SE_1	Table tennis appears to have enhanced the self-image of my child with ASD	$Sİ_1$	Masa tenisi oynamak, OSB'li çocuğumun benlik aygısını artırır.
SE_2	Playing table tennis appears to allow my child with ASD to express him or herself	$Sİ_2$	Masa tenisi oynamak OSB'li çocuğumun kendisini fade etmesine fırsat sağlar.

Process of data analysis

The data collected were computerized to evaluate in SPSS-23 and AMOS-19 statistical package programs. Maximum Likelihood (ML) parametric estimation method was applied in the study because of the multivariate distribution of normality of the collected data. Firstly, Exploratory Factor Analysis (EFA) was used to determine the factor structure of the scale translated into Turkish; Confirmatory Factor Analysis (CFA) was conducted to test model fit and validate factor structure.In addition, Cronbach's Alpha coefficients were determined for the internal reliability of the Turkish form. In addition, the Composite Reliability (CR) for the scale's structure reliability and the AverageVariance Extracted (AVE) for the convergence validity and discriminant validity were calculated in the study.

RESULTS

Descrpitive result

KMO (*Kaiser-Meyer-Olkin Measure of Sampling Adequacy*), which was made to determine the suitability of the data for factor analysis, was found as .84. Additionally, it was determined that the chi-square (X2 (66) = 940.427; p <.00) was significant when the *Barlett Sphericity* test results were examined. These values provided a criterion about whether the data can be modeled with factor analytical model or not. According to Field (2000), these values exhibited that the sample size determined for factor analysis was "good". According to the EFA results, the factor loads of the sub-dimensions in PRIS varied between .68-.82 for the "interest intensity" sub-dimension, .83-.87 for the "social bonding" sub-dimension, and .85-.86 for the "self-expression" sub-dimension (See Table 3). Also, item "*My child with ASD appears to enjoy discussing table tennis with his or her acquaintances*" which is in factor named "*social bonding*" was removed from the analysis process since the factor load of the item is overlapping (Buyukozturk, 2011).

Table 3. Exploratory factor analysis of PRIS

Items and factor domains	Factor 1	Factor 2	Factor 3
Interest Intensity (II)			
II_1	.82		
II_2	.79		.35
II_3	.73		.42
II_4	.73	.38	
II_5	.70		
II_6	.68		
Social Bonding (SB)			
SB_1		.87	
SB_2		.84	
SB_3	.35	.51	.48
SB_4		.83	
Self-Expression (SE)			
SE_1			.86
SE_2	.30		.85

Note: **Binaryitems

CFA results proved that the factor load of the sub-dimensions in PRIS varied between .48-.95 for the "interest intensity" sub-dimension, .77-.90 for the "social bonding" sub-dimension, and .79-.98 for the "self-expression" sub-dimension. It was determined that the lowest mean was "identity expression" (M = 3.99) and the highest mean was "interest intensity" (M = 4.11) at the level of sub-dimensions (see Table 4). Also, the result of CFA demonstrated that modifications were needed between some items so that the model could set good fit (see Figure 1). After modifications, obtained model fit values were respectively; $\chi 2/df$= 2.05, p<.00; RMR= .06; SRMR= .09; CFI= .95; GFI= .88; NFI= .91; TLI= .93; RMSEA= .09.Researchers have determined that these modelfit values were within acceptable limits (i.e., Hair et al., 2010; Hooper et al., 2008, Tabachnick&Fidell, 2006).Theoretically, such modifications could be created between the error terms of these items, since such a relationship could be mentioned between the items mentioned above (Kyle et al., 2007). Factor structures of PRIS were presented in Figure 1.

Reliability and validity results

The scales' the Cronbach's alpha coefficient was determined to be between .86 and .87. In addition, under convergent validity the AVE was calculated as 0.55 for the "interest intensity" sub-dimension, .57 for the "social relationship" sub-dimension, and .74 for the "self-expression" sub-dimension (see Table 5). It could be expressed as a proof for the reliability of the measurement results if the reliability level of a dimension was (<.70) (Hair et al., 2010). Also, there was a positive correlation between the sub-dimensions of PRIS when Table 5 was considered.

Table 4. Confirmatory factor analysis ofPRIS

Items and factor domains	M	SD	R^2	t-value
Interest Intensity (II)	4.11	.62		
II_1	4.13	.69	.89	12.73**
II_2	4.13	.75	.94	13.86**
II_3	4.13	.88	.83	11.29**
II_4	3.99	.87	.50	5.86**
II_5	4.15	.75	.53	6.27**
II_6	4.11	.83	.48	5.50**
Social Bonding (SB)	4.11	.71		
SB_1	4.11	.90	.89	11.84**
SB_2	4.20	.88	.81	10.44**
SB_4	4.14	.74	.77	9.70**
Self-Expression (SE)	3.99	.84		
SE_1	4.00	.90	.79	9.20**
SE_2	3.99	.89	.98	11.60**

Note: M= mean, SD= standard deviation, **p<0.00

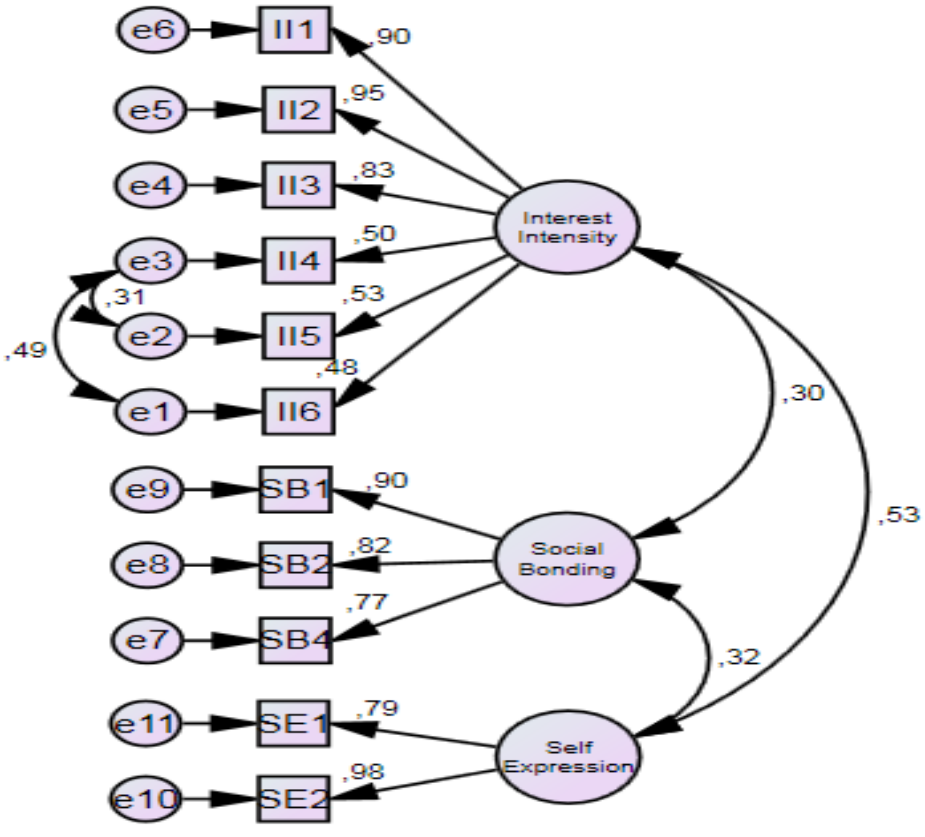

Figure 1. Standardized SEM analysis

Table 5. Factors' correlations, internal consistency reliability, AVE and CR scores of PRIS

	1	2	3	α	CR	AVE
1.Interest Intensity	-	.47**	.50**	.87	.88	.55
2.Social Bonding		-	.47**	.86	.82	.57
3.Self-Expression			-	.87	.85	.74

Note: M= mean, SD= standard deviation, CR= composite reliability, AVE= Average variance extracted, **p<.00s

The fact that the AVE calculated for convergence validity was greater than (<0.50) has been accepted as proof of convergence validity (Fornel& Larcker, 1981; Peterson, 2000). Correlations between sub-dimensions and square root of AVE were used for discriminating validity. Accordingly, the square root of AVE in any dimension should not be less than the correlation between that dimension and the other dimension, at the same time it should not be less than .50 (Fornel& Larcker, 1981). It was determined that the values calculated for the scale provided convergence validity and discriminative validity (see Table 6).

Table 6. Discriminant validity of PRIS

	1	2	3
1.Interest Intensity	**.74**		
2.Social Bonding	.47	**.75**	
3.Self-Expression	.50	.47	**.86**
AVE	**.55**	**.57**	**.74**

Note: AVE= Average variance extracted

DISCUSSION

The current study, which was conducted to investigate the behaviors of children with ASD playing table tennis with the parent report and to evaluate the perceptions of their children about playing table tennis, would contribute to leisure literature.

In the exploratory factor analysis, it was determined that the 12-item-3 sub-dimension structure can be evaluated as 11-item and 3-factor structure, since one item expresses an overlapping value. In the confirmatory factor analysis tested to procure evidence for the scale's the factor structure, it was determined that the structure was confirmed. Fit values such as $\chi 2/df$= 2.05, p<.00; RMR= .06; SRMR= .09; CFI= .95; GFI= .88; NFI= .91; TLI= .93; RMSEA= .09were used in the evaluation of the factor structure and these model fit values obtained were within acceptable limits (Hooper et al., 2008, Meydan &Sesen, 2015; Tabachnick&Fidell, 2006).

When statistics literature has been examined, value (≥.05) of RMSEA and SRMR were accepted as a perfect fit, values (<.10) as an acceptable fit; values (>.10) as a bad fit. As for other fit criteria, it could be interpreted as the model fits better if the value was between 0 and 1 and close to 1 (Byrne, 1998; Jöreskog&Sörbom, 2002; Yilmaz & Ilhan Dalbudak, 2018). However, there have been different opinions on $\chi 2/df$, especially researchers have made different evaluations on this issue in statistics literature. For example, Hu and Bentler (1999) stated that the $\chi 2/df$ was very sensitive to the number of samples and stated that the increase in the sample number may cause the $\chi 2/df$ to increase and the research models to be rejected. However, Hooper et al. (2008) expressed that there was no consensus in which value ranges are acceptable for this statistical result, so there are researchers who accept $\chi 2/df$value up to 2.0 (Tabachnick&Fidell, 2006) as well as those who accept it up to 5.0 (Wheaton at al., 1977).

The results of our study parallel those of other research in different cultures on the leisure involvement scale. For example, Vlachopoulos et al. (2008) tested MIS's the factor structure on 260 Greeks aged 15-71. In the study, it was determined that five-factor MIS was not clearly supported for this sample group, only three factors could be used as a valid and reliable measurement tool for this sample.Huang et al. (2013) determined the scale as a three-factor structure in a study conducted with 249 Taiwan citizens. Similarly, Hickerson et al. (2014) analyzed the three-factor structure adapted from MIS in order to evaluate the behaviors of children with ASD towards video game through the parents and determined that the measurement tool gave valid and reliable results. However, there were also studies in the literature indicating that the five-factor structure of MIS could be used as a reliable measurement tool without loss of item or sub-dimension. For example, Gurbuz et al. (2018) determined that the Turkish validity and reliability study of the Turkish validity and reliability study, which was carried out to measure the involvement levels of 309 Turkish individuals participating in fitness programs as a leisure activity, could be used for Turkish culture as well.

Based on the average scores at the factor level, involvement of a child with ASD towards

table tennis activity is quite intense. This situation can be interpreted as the fact that the activity is in the center of the life of the individual, and it is also effective at the level of social bonding. In addition to this Interest Intensity and social bonding effect created through the activity, it also generates information on the extent to which table tennis determines the child's self-expression process with ASD. When the average values of PRIS were examined, it was observed that it had the lowest score in the dimension of self-expression. With the table tennis activity, a child with ASD values the activity at a high level, can socialize because of the activity, but the activity may be inadequate in using it as a means of self-expression. Karakas et al. (2016) concluded in a study in which physical activities were carried out to evaluate the social skill levels and behaviors of children with ASD aged 5-6 that as the duration of the activity increases, children's social and behavioral skills improve.

Communication of children with ASD with their peers and their environment is limited. This is because they encounter some obstacles in establishing social bonds with their environment, or they are insensitive to their environment (Shattuck et al., 2011). However, in studies conducted, researchers found that children with ASD started to display socialization-oriented behaviors such as communicating with their environment and playing games together, especially with activity-based education programs (Ingersoll, 2009; Koegel et al., 2012). Children with ASD's another problem about socialization is their repetitive behaviors and their interest and focus on only one thing. However, having a limited interest in any subject was known to has a negative effect on the socialization levels of children with ASD (APA, 2000; White-Kress, 2003).

Gal et al. (2009) defined these interests as individuals with ASD's preoccupations or interests which become unusual in their focus and/or intensity and called these interests as circumscribed interests (CI). According to the definition above, Activities with high interest intensity scores in PRIS can be considered as CI for children with ASD. It is seen that the intensity of these interests increases throughout the life of the individual, and this can hinder the development of peer relationships because the individual is only occupied with her own interests. Traditionally, interventionists have focused on reducing interaction by CI to increase social interaction with other people. However, research (Boyd et al., 2006; Gal et al., 2009) has reported that a CI can only be socially isolated when it doesn't match mainstream hobbiesor interests. A child's CI can be a powerful context or tool for developing appropriate behavior or social skills (i.e., Attwood, 2003) when considered as an opportunity to target new skills using motivation to encourage involvement.

Conclusion

This study has revealed the Turkish validity and reliability of PRIS which is a parent-reported scale for testing children with ASD's involvement in leisure. The results demonstrated that the Turkish version of the scale has composed of 11 items and 3 factors (interest intensity, social bounding, self-expression) while original one has consisted of 12 items and 3 factors. It has been thought that the Turkish form of scale could be used as a valid and reliable measurement tool to determine the involvement levels of Turkish children with ASD towards both table tennis, and the levels of their involvement in other physical activities. On the other hand, it has been thought that this measurement tool would contribute to various fields of study such as Therapeutic Recreation Expertise, even if indirectly.This situation has revealed that different studying groups could also help about developing the obtained scale structure.

Limitation and future research

The fact that only the interest intensity, self-expression and social bonding dimensions of the leisure involvement scale used in the study were evaluated within the scope of the study have proved that the involvement in table tennis activity was limited in these dimensions and examined in the study. In addition, determination of the study group according to certain criteria such as “thechild with ASD is between the ages of 5 and 18”, “they have been involved in table tennis activity for a year or more” and “participate in thisactivityat least two days a week”haveconstituted the limitation of the study regarding the sample.For this reason, the findings obtained from this study cannot be directly generalized with other research findings obtained from children with ASD who participate in various activities (i.e., physical) apart from table tennis, but it is thought that the scale can be used by conducting a pilot study to measure the level of

individuals' involvement who participate in other physical activity programs.

To better evaluate the sport clubs that offer recreational activities to children with ASD as a preventive health service, it can be done with different studies that include the opinions of families on the subject in a more comprehensive way. This situation will contribute to the researchers in understanding the subject more deeply. It can be said that such research results will also guide business managers who provide such recreational services in creating customer profiles of parents with children with ASD and effectively presenting their services to families. At the same time, it is thought that future studies that include different types of activities and focus on sample groups of other disabled individuals will contribute to filling an important gap in the leisure literature.

Conflict of interest

Theauthorsdeclarenoconflicts of interest. No financialsupport has beenreceived.

Ethics Committee

The study was confirmed by Bartın University Social and Human Sciences Ethics Committee which is a recognized review board or ethics committee on February 09, 2023 (Approval no:2023-SBB-0051).

Author Contributions

Study Design, İA; Data Collection, İA; Statistical Analysis, İA; DataInterpretation, İA; ManuscriptPreparation, İA, İB; LiteratureSearch, İA, İB. Thepublishedversion of themanuscript has beenreadandapprovedbyallauthors.

REFERENCES

Akyuz, H. (2020).Investigation of the relationship between recreation benefit and life satisfaction levels of recreation department students. *Turkish Studies-Social, 15(5), 2323-2336.*

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorder* (4th Edition). Washington, DC: American Psychiatric Association.

Arnberger, A., Eder, R., Allex, B., Preisel, H., &Husslein, M. (2019). National park affinity segments of overnight tourists differ in satisfaction with, attitudes towards, and specialization in, national parks: Results from the Bavarian forest national park. *Journal for Nature Conservation, 47,* 93-102.

Attwood, T. (2003). *Understanding and managing circumscribed interests.* In M. Prior (Ed.), *Learning and behavior problems in Asperger syndrome* (pp. 126–147). Guilford Press.

Backman, S., & Crompton, J. (1989). Discriminating between continuers and discontinuers of two public leisure services. *Journal of Park and Recreation Administration 7*, 56-71.

Baerentzen, M.B. (2018). *Development of A Life Satisfaction Measure for Persons with Severe and Persistent Mental İllness*. Doctoral's Thesis, Illinois Institute of Technology, Chicago, 9-13.

Bloch, P., Black, W., & Lichtenstein, D. (1989). Involvement with the equipment component of sport: Links to recreational commitment. *Leisure Sciences, 11*, 187-200.

Boyd, B. A., Conroy, M.A., Mancil, G.R., Nakao, T., & Alter, P.J. (2006). Effects of Circumscribed Interests on the Social Behaviors of Children with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders, 37*(8), 1550–1561.

Bremer, E., Crozier, M., & Lloyd, M. (2016). A systematic review of the behavioral outcomes following exercise interventions for children and youth with autism spectrum disorder. *Autism*, *20*(8), 899-915.

Broughton, K.A., Payne, L., &Liechty, T. (2017). An exploration of older men's social lives and well-being in the context of a coffee group. *Leisure Sciences, 39*(3), 261–276.

Buyukozturk, S. (2011). *Manual of data analysis for social sciences* (11th Edition). Ankara: PegemPublisher.

Byrne, M.B. (1998). *Structural equation modeling with LISREL, PRELIS and SIMPLIS: Basic concepts, applications, and programming*. Lawrence Erlbaum Associates, Mahwah-New Jersey, London.

Celsi, R.L., & Olson, J.C. (1988). The Role of involvement in attention and comprehension processes. *Journal of Consumer Research, 15*(2), 210-224.

Chang, S., & Gibson, H.J. (2011). Physically active leisure and tourism connection: leisure

involvement and choice of tourism activities among paddlers. *Leisure Sciences*, *33*, 162–181.

Cockerill, I. M. (1995). Self-esteem development through participation in physical activity. *Journal of Workplace Learning*, *4*, 14-17.

Decloe, M.D., Kaczynski, A.T., &Havitz, M.E. (2009). Social participation, flow, and situational involvement in recreational physical activity. *Journal of Leisure Research*, *41*(1), 73-90.

Deneau, J., van Wyk, P.M., & Horton, S. (2019). Capitalizing on a "huge resource": successful aging and physically active leisure perspectives from older males. *Leisure Sciences*, 1-18.

Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*(1), 71–75.

Dimanche, F., Havitz, M.E., & Howard, D.R. (1991). Testing the involvement profile scale in the context of selected recreational and touristic activities. *Journal of Leisure Research*, *23*, 51–66.

Driver, B.L. (1997). The defining moment of benefits. *Parks and Recreation*, *32*(12), 38-41.

Field, A. (2000). *Discovering statistic using SPSS for windows. London- Thousand Oaks New Delhi: Sage Publications.*

Fornell, C., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50.

Gal, E., Bauminger, N., Goren-Bar, D., Pianesi, F., Stock, O., Zancanaro, M., & (Tamar) Weiss, P.L.(2009). Enhancing social communication of children with high-functioning autism through a co-located interface. *Ai & Society*, *24*(1), 75–84.

Gurbuz, B., & Henderson, K.A. (2014). Leisure activity preferences and constraints: Perspectives from Turkey. *World Leisure Journal*, *56*(4), 300-316.

Gurbuz, B., Cimen, Z., & Aydin, İ. (2018). Leisure time interest scale: Turkish form validity and reliability study. *Journal of Physical Education and Sport Sciences*, *16*(4), 256-265.

Gurbuz, B., & Henderson, K.A. (2013). Exploring the meanings of leisure among Turkish university students. *Croatian Journal of Education*, *15*(4), 927-957.

Hair, J.F., Black, W.C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th Edition). New Jersey: Pearson Prectice Hall.

Hammer, L.B., & Sauter, S. (2013). Total worker health and work–life stress. *Journal of Occupational and Environmental Medicine*, *55*, 25-29.

Havitz, M., Dimanche, F., & Howard, D. (1993). A two-sample comparison of the Personal Involvement Inventory (PII) and Involvement Profile (IP) scales using selected recreation activities. *Journal of Applied Recreation Research*, *17*, 331–364.

Havitz, M.E., & Dimanche, F. (1997). Leisure involvement revisited: conceptual conundrums and measurement advance. *Journal of Leisure Research*, *29*(3), 245-278.

Hickerson, B., Finke, E.H., & Choi, Y. (2014). Enduring leisure involvement and children with autism spectrum disorder. Validation of a parent-reported involvement scale. *Therapeutic Recreation Journal*, *48*(1), 31-45.

Hickerson, B., & Mowen, A.J. (2012). Behavioral and psychological involvement of online video gamers: Building blocks or building walls to socialization? *Society & Leisure*, *35*(1),79-103.

Higie, R.A., & Feick, L.F. (1989). Enduring involvement: conceptual and measurement issue. *Advances in Consumer Research*, 16, 690-696.

Hollander, E., &Nowinski, C.V. (2003). *Core Symptoms related disorder and course of autism* (16-17). New York: Markel Dekker.

Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *The Electronic Journal of Business Research Methods*, *6*(1), 53-60.

Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55.

Huang, YT., & Cheng, KM. (2013). On producing a leisure involvement scale for sports volunteers for the 2011 Taiwan national

games in Changhua. *Journal of Global Business Management*, *9*(1), 131-137.

Ingersoll, B.R. (2009). Teaching social communication: A comparison of naturalistic behavior and development, social pragmatic approaches for children with autism spectrum disorders. *Journal of Positive Behavior Interventions*, *12*, 33–43.

Izenstark, D., & Ebata, A.T. (2019). Why families go outside: an exploration of mothers' and daughters' family-based nature activities. *Leisure Sciences*, 1–19.

Jain, K., & Srinivasan, N. (1990). An empirical assessment of multiple operationalizations of involvement. *Advances in consumer research*, *17*, 594-602.

Jamrozy, U., Backman, S.J., & Backman, K.F. (1996). Involvement and opinion leadership in tourism. *Annas of Tourism Research*, *23*(4), 908-924.

Jöreskog, K.G., &Sörbom, D. (2002). The student editions of LISREL 8.53 for Windows, Lincolnwood. IL: Scientific Software International, Inc.

Jun, J, Kyle, G.T., Vlachopoulos, S.P., Theodorakis, N.D., Absher, J.D., & Hammitt, W.E. (2012). Reassessing the structure of enduring leisure involvement. *Leisure Sciences: An Interdisciplinary Journal*, *34*(1), 1-18.

Kapferer, J., & Laurent, G. (1985a). Consumer involvement profiles: A new practical approach to consumer involvement. *Journal of Advertising Research*, *25*, 48-56.

Kapferer, J., & Laurent, G. (1985b). Consumers' involvement profile: new empirical results. *In: for Consumer Research*. *12*, 290-295.

Kara, F. M., Gurbuz, B., &Oncu, E. (2019). Work hard, play hard: Leisure satisfaction and work engagement among Turkish women. *Work- A Journal of Prevention, Assessment & Rehabilitation*, *64*(2), 177-185.

Karakas, G, Yilmaz, A., & Kaya, H. (2016). Teachers comments by 5 - 6 age children with autism spectrum disorders and behavior of the effect of social skills level sports. *Journal of Physical Education and Sport Sciences,10*(2), 280-294.

Kim, J., & Park, S. (2018). Leisure and health benefits among Korean adolescents with visual impairments. *International Journal of Qualitative Studies on Health and Well-being*, *13*(1), 1-8.

Kim, S.S., Scott, D., & Crompton, J.L. (1997). An exploration of the relationships among social psychological involvement, behavioral involvement, commitment, and future intentions in the context of birdwatching. *Journal of Leisure Research*, *29*,320-341.

Koegel, L.K., Vernon, T.W., Koegel, R.L., Koegel, B.L., & Paullin, A.W. (2012). Improving social engagement and initiations between children with autism spectrum disorder and their peers in inclusive settings. *Journal of Positive Behavior Interventions*, *14*(4), 220–227.

Kyle, G.T. (2001). *An examination of enduring leisure involvement*. Doctoral's Thesis, The Pennsylvania State University, 10-25.

Kyle, G.T., & Chick, G. (2002). The social nature of leisure involvement. *Journal of Leisure Research*, *34*, 426-448.

Kyle, G.T., Absher, J., Norman, W., Hammitt, W., &Jodice, L. (2007). A modified involvement scale. *Leisure Studies*, *26*, 399-427.

Kyle, G.T., Kerstetter, D.L., &Guadagnolo, F.B. (1999). The influence of outcome messages and involvement on participant reference price. *Journal of Park and Recreation Administration, 17*(3), 53–75.

Lang, R., Koegel, L.K., Ashbaugh, K., Regester, A., Ence, W., & Smith, W. (2010). Physical exercise and individuals with autism spectrum disorders: A systematic review. *Research in Autism Spectrum Disorders*, *4*(4), 565-576.

Laverie, D., & Arnett, D. (2000). Factors affecting fan attendance: The influence of identity salience and satisfaction. *Journal of Leisure Research*, *32*, 225-246.

McCarville, R. (1991). An empirical investigation of the influence of cost information on willingness to pay for public aerobics classes. *Leisure Sciences,13*, 85-96.

McIntyre, N. (1989). The personal meaning of participation: enduring involvement. *Journal of Leisure Research, 21*,167-179.

McIntyre, N., &Pigram, J. (1992). Recreation specialization reexamined: the case of vehicle-based campers. *Leisure Sciences*, *14*, 3-15.

McQuarrie, E.F., & Munson, J.M. (1987). The Zaichkowsky personal involvement

inventory: modification and extension. *Advances in Consumer research, 14*, 36–40.

Meydan, C., &Sesen, H. (2015). *Structural equation modeling AMOS application*. Ankara: Detay Publishing.

Mittal, B. (1995). A comparative analysis of four scales of consumer involvement. *Psychology and Marketing*, *12*(7), 663-682.

Odabası, Y., & Baris, G. (2002). Consumer Behavior (2th Edition). Istanbul: MediaCat Academy Publishing.

Orsmond, G.I., Krauss, M.W., & Seltzer, M.M. (2004). Peer relationship and recreational activities among adolescents and adult with autism. *Journal of Autism and Development Disorders*, *34*(3), 245-256.

Peterson, R. (2000). A meta-analysis of variance accounted for and factor loadings in exploratory factor analysis. *Marketing Letters*, *11*, 261–275.

Reyes Uribe, A.C. (2017). The influence of psychological needs in Mexican older adults' leisure motivations. *Leisure Sciences*, 1–16.

Ridinger, L.L., Funk, D.C., Jordan, J.S., & Kaplanidou, K. (2012). Marathons for the masses: exploring the role of negotiation-efficacy and involvement on running commitment. *Journal of Leisure Research*, *44*, 155–178.

Rodgers, W.C. Schneider, K.C. 1993. An empirical evaluation of the Kapferer and Laurent consumer involvement profile scale. *Psychology and Marketing*, *10*, 333-345.

Rothschild, M.L. (1979). Advertising strategies for high and low involvement situations. In: Maloney, J., & Silverman, B. (Eds.). *Attitude research plays for high stakes. Chicago: American marketing association*. (pp.74-93).

Shattuck P.T, Orsmond G.I, Wagner M., & Cooper B. P. (2011). Participation in social activities among adolescents with an autism spectrum disorder. *PLoS ONE*, *6*(11), 27176.

Sheldrick, R. C, Neger, E. N., Shipman, D., & Perrin, E. C. (2012). Quality of life of adolescents with autism spectrum disorders: Concordance among adolescents' self-reports, parents' reports, and parents' proxy reports. *Quality of Life Research*, *21*, 53-57.

Sherif, C.W., Sherif, M., & Nebergall, R. (1965). *Attitude and attitude change*: *The social judgment involvement approach*. Philadelphia, PA: Saunders.

Tabachnick, B. G., & Fidell, L. S. (2006). *Using multivariate statistics* (5th Edition). Newyork: Pearson Education, Inc.

Vlachopoulos, S. P., Theodorakis, N.D., & Kyle, G.T. (2008). Assessing exercise involvement among participants in health and fitness centers. *European Sport Management Quarterly*, *8*(3), 289-304.

Wellman, J. D., Roggenbuck, J.W., & Smith, A.C. (1982). Recreation specialization and norms of depreciative behavior among Canoeists. *Journal of Leisure Research*, *14*, 323–340.

Wheaton, B., Muthen, B., Alwin, D. F., & Summers, F. (1977). *Assessing Reliability and Stability in Panel Models*. JSTOR, Reviewed Date: 20.03.2020http://www.jstor.org/stable/270754. (pp. 99).

White-Kress, V.E. (2003). Self-injurious behaviors: Assessment and diagnosis. *Journal of Counseling& Development*, *81*, 490-496.

Wiley, C.G.E., Shaw, S.M., & Havitz, M.E. (2000). Men's and women's involvement in sports: an examination of the gendered aspects of leisure involvement. *Leisure Sciences*, 22(1), 19–31.

Williams, C. (2013). *Leisure involvement and centrality: Insights from hikers on the Appalachian trail*. Doctoral's Thesis, State University of New York College of Environmental Science and Forestry Syracuse, New York.

Yaşartürk, F., Akyüz, H.&Karataş, İ. (2020). The investigation of the relationship between handball players' levels of leisure boredom and happiness. African Educational Research Journal, 8(1), 81-86.

Yilmaz, V., & Ilhan Dalbudak, Z. (2018). Investigation of intermediary variable effect: An application on high speed train operations. *International Journal of Management, Economics and Business*, *14*(2), 517-534.

Zaichkowsky, J. L. (1985). Measuring the involvement construct. *Journal of Consumer Research*, *12*(3), 341–352.

Zhou, J. (2010). Gender, Personality, and Benefits Sought: Examining Chinese leisure travelers. *International Journal of Tourism Sciences*, *10*(3), 1-24.s.