

Mastery motivation in Iranian parents and their children: A comparison study of their views

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Abstract

Context: The Dimensions of Mastery Questionnaire has been widely used to assess children's motivation to master skills and solve problems.

Aims: The present study examined Iranian parents' views on the mastery motivation of their children compared with the children's views of their own mastery motivation.

Setting and Design: This analytic cross-sectional and psychometric study was done in 2017-2018 in Iranian governmental regular schools in Sari, Babol (Mazandaran) and Tehran. 11 schools (5 Tehran, 3 Sari and 3 Babol) were selected based on cooperation and acceptance of the study.

Materials and Methods: A convenience sampling of 114 families with schoolage children was invited to participate in the present study. Fathers (33.7%) or mothers (69.7%) and their 1115 yearold children (67% boys) filled the questionnaires; 42 parents and 33 children were asked to refill questionnaires after 2 weeks.

Statistical Analysis Used: All data were analyzed using descriptive statistics, inferential internal consistency, and test-retest reliability.

Results: There was no difference between parent and child views on 3 out of 4 persistence subscales, but for all the emotional subscales plus general competence, children rated themselves higher than the parents rated them. The intraclass correlation coefficient of all domains and total score were significant ($P < 0.01$).

Conclusions: Pediatric rehabilitation professionals need to be aware that children and adults may differ in their view of the children's motivation. Disagreements should be discussed with parents and students. Specific treatment goals should be developed for the dimensions on which both parents and their children agree.

Keywords: Child, Mastery motivation, Parents

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INTRODUCTION

The International Classification of Functioning, Disability, and Health model emphasizes personal, environmental, and physical aspects as essential factors that affect each other in determining health conditions and personal promotion.^[1] Determining the effects of personal, environmental, and physical factors on personal health status can help improve pediatric rehabilitation services to learn meaningful activities and participation. Motivation is attributed to changes in child motor abilities and personality characteristics, according to studies by Bartlett and Palisano.^[2] Mastery motivation is a particular type of motivation, defined as the “Multifaceted, intrinsic psychological force that motivates people to master a skill or task that is at least moderately challenging for them.”^[3]

Mastery motivation has two significant aspects; first, the instrumental aspect is described as an inclination to show persistence in an almost difficult task to solve problems. Second, the expressive or emotional aspect of mastery motivation can be seen in positive and negative facial, postural, vocal, and behavioral expressions while people are working or after completing tasks.^[4] Children, who are highly motivated to master tasks, learn more successful strategies, and thus become more qualified; hence, the motivation is essential in pediatric promotion and academic presence.^[5] Mastery motivation provides information on how children deal with a challenging situation, the learning process, and the prediction of a successful challenging engagement.^[4,5] The method, by which the mastery motivation leads to novel skills, can be explained by White’s motivation theory indicating that children have the motivation to explore the surrounding environment. These practices help children to learn effective interaction with the environment. This learning procedure leads to a sense of efficacy and later competence.^[6]

In general, the Dimensions of Mastery Questionnaire (DMQ) can be responded to and completed by parents, teachers, and children to determine their views on the mastery motivation in children. Therefore, the DMQ is valuable for the achievement of a family-centered approach.^[7] Children and their parents may have various views on the level of mastery motivation in children. Morgan *et al.* found that children had lower perceived views of their social persistence with adults, and lower ratings of the mastery pleasure and general competence than their parents. On the contrary, opinions on cognitive and gross motor and persistence aspects were higher in children than parents and teachers.^[3]

Assessing motivation is essential to predict children’s future success in life at various academic stages and for developing social skills.^[8,9] Jozsa *et al.* state that motivation plays a vital role in school success, and it has predictive power even after controlling for children’s IQ and parental education.^[10] Several other studies have reported a strong correlation between motivation, grade point average, and success in school.^[11-13]

When the DMQ was conducted on Hungarian, English, and Chinese samples, evidence for reliability and validity were found the three cultures were compared at the same ages.^[14] Acceptable reliability of the DMQ is desirable, but some self-ratings of the school-aged children and teens were less reliable.^[3,15,16] The test-retest reliability of DMQ subscales was acceptable.^[17,18]

It is crucial to have a view of both parents and children in terms of mastery motivation in order to get a complete picture of the mastery motivation for children. This comparison can be helpful in understanding how parents understand their child’s level of motivation. It can also show whether there are differences in the views of parents and their child, i.e., how parents view their child’s persistence and ability to problem solve, and how their child interacts with problems and others. Contrasts in parent/child views may help understand what the child thinks of her/himself. Understanding these issues can be practical in better understanding the weaknesses and abilities of the child. Furthermore, parents’ views can result in the development of treatment programs and goals that are not taken into account by children.^[7]

The present study aimed to examine Iranian parents’ views on the mastery motivation of their child compared with their children’s own views on their mastery motivation. Besides, the study provided information about the reliability of the Iranian DMQ18.

MATERIALS AND METHODS

Research design and setting

The statistical population included parents who had a child of school age. This analytic cross-sectional and psychometric study was done in 2017–2018 in the Iranian governmental regular schools in cities of Sari and Babol (Mazandaran) and Tehran. Eleven schools (5 Tehran, 3 Sari, and 3 Babol) were selected based on cooperation and acceptance of the study (Accidental Sampling). A convenience sample was obtained from families with a school-age child at regular school. Parents had to be able to speak and read Farsi and independently respond

to questionnaires fluently. The child could fluently speak and read Farsi and normal development and could independently respond to questionnaires.

Sample size and sampling procedure

A total of 114 families and their child that agreed to participate were included in the study. Among the participants in the study, 42 parents and 32 children were tested for reliability re-filled the questionnaires after 2 weeks to examine the test-retest reliability. Participants Sample size calculation based on previous study ($\alpha = 0.05$, $Z_{1-\alpha/2} = 1.96$

$\beta = 0.2$, $Z_{1-\beta} = 0.84$, $\sigma_1 = 0.46$, $\sigma_2 = 0.96$, $X_1 = 3.45$, $X_2 = 3.16$).^[15] the sample size was estimated to be 112 for each group.

$$n = \frac{(\bar{x}_{1-\alpha/2} + \bar{x}_{1-\beta})^2 * (\sigma_1^2 + \sigma_2^2)}{(\bar{x}_1 - \bar{x}_2)^2}$$

Data collection tool and procedure

Data collected with demographic questionnaire, The DMQ 18, School-age Version, rated by adults and DMQ18, School-age Motivation Questionnaire rated by school-age children themselves.

Demographic questionnaire includes information (such as age, gender, and relation to the child).

Translation and back translation of DMQ18 were done on the school-age children with ratings by adults and self-reports by children using the method of translation and adaptation of instruments according to the World Health Organization^[19] in order to ensure the semantic, cultural, and conceptual equivalence with the original questionnaires. The following process was performed: Two translators accomplished the Farsi translation. A session consisted of the translation agreement and consensus by two translators. Eventually, it produced the first Iranian version of the original questionnaire (the 41 items of the original questionnaire were all included). In the next step, the cultural acceptability was checked by 10 parents of normal children for the parent questionnaire, 12 children for the child questionnaire, as well as 2 independent occupational therapists and 2 pediatricians for both questionnaires. The back-translation was carried out by a translator whose native language was English and was bilingual in Farsi and English. After sharing the back translation with the original DMQ developer, the questionnaire was finally approved. DMQ18 was developed to assess mastery motivation in infants, preschool, and school-age children. The school-age questionnaire has two versions, one for parents and others for children.^[20] The 41 items were

divided to eight subscales as follows: Cognitive-Oriented Persistence $(1 + 14 + 17 + 23 + 29 + 40)/6$, Gross Motor Persistence $(3 + 12 + 26 + 36 + 38)/5$, Social Persistence with Adults $(8 + 15 + 19 + 22 + 33 + 37)/6$, Social Persistence with children $(6 + 7 + 25 + 28 + 32 + 35)/6$, Mastery Pleasure $2 + 11 + 18 + 21 + 30)/5$, Negative Reactions- frustration/anger $(9 + 13 + 16 + 41)/4$, Negative Reactions- sadness/shame $(5 + 24 + 34 + 39)/4$, and General Competence $(4 + 10 + 20 + 27 + 31)/5$.^[20]

The DMQ 18, School-age Version, rated by adults. This version of the school-age motivation questionnaire has adults rate their child's motivation. This version also contains 41 items scored according to the Likert scale (1–5) consisting of scores from 1 “not at all like this child” to 5 “exactly like this child.” The eight subscales were computed, as shown above. The total DMQ score was the average of all 41 items.

DMQ18, School-age Motivation Questionnaire rated by school-age children themselves. Like the school-age Motivation Questionnaire rated by adults, this questionnaire contains 41 items according to Likert scale (1–5) consisting of 1 “not at all like me” to 5 “exactly like me,” and like the school-age Motivation Questionnaire rated by adults, it was divided into eight subscales computed as above.^[20]

Data analysis

Descriptive statistics were used to describe sociodemographic factors for children and parents. Mean scores of children and their parents were compared using independent sample *t*-tests. Reliability was assessed in two ways: internal consistency reliability (Cronbach's alpha) and also the test-retest using intra-class correlation coefficients (ICC). SPSS version 22 was used (SPSS Inc., Chicago, IL, USA). An ICC ≥ 0.70 was considered as acceptable test-retest reliability, and Cronbach's alpha ≥ 0.70 was considered to be acceptable internal consistency. ICCs and alphas between .60 and .69 were considered to be marginally acceptable reliabilities. Statistical significance at $P < 0.05$ was used in all cases.

Ethical consideration

In the present study, the participants were recruited on a voluntary basis. Father or mother and their child (boy or girl) were asked to fill the questionnaires. Before filling the DMQ, participants signed consent forms for participation. Parents and their children could withdraw from the study at any time without further explanation.

The study followed the Code of Ethics from the University of Social Welfare and Rehabilitation Sciences (IR. USWR. REC.1394.225).

RESULTS

114 families and their children were included in the present study. The DMQ was filled by mothers (79, 69.3%), fathers (35, 30.7%). The 114 children included 76 boys (66.7%) and 38 girls (33.3%) with a mean age of 147.25 ± 16.03 months, which filled the questionnaires [Table 1]. They ranged from 11 to 15 years of age.

According to Table 2, Cronbach's alphas for parent ratings were acceptable for the gross motor persistence subscale (alphas = 0.732) and total score of DMQ (alphas = 0.880). For the negative reactions-sadness/shame, negative reactions- frustration/anger, and social persistence with adults' subscales, the Cronbach's alpha were low from 0.50 to 0.60. At other subscales, Cronbach's alpha was acceptable, at least minimally (0.60–0.70).

The test-retest reliability was acceptable (ICC = 0.846–0.678) and significant ($P = 0.00$) for all parent ratings of the subscales of DMQ except for the negative reactions-sadness/shame subscale (ICC was 0.678) [Table 2]. The test-retest reliability correlation for the DMQ18 was adequate ($r = 0.86$, $P = 0.006$) in a 2-week interval.

Table 3 shows that Cronbach alphas rated by school-age children for the general competence, negative reactions-frustration/anger, and gross motor persistence subscales, and the total score of DMQ were acceptable. The Cronbach's alpha of negative reactions-sadness/shame was low, but the other subscales had minimally acceptable

Table 1: Child (n=114) and parent (n=114) demographic characteristics

Variable	n (%)
Gender	
Boys	76 (66.7)
Girls	38 (33.3)
Parents	
Father	35 (30.7)
Mother	79 (69.3)

Table 2: Cronbach's alphas (n=114) and intraclass correlation coefficients (n=42) of the Dimensions of Mastery Questionnaire 18 subscales for parents

DMQ18 subscales	Cronbach's alpha	ICC (95%CI)	P	df
Cognitive oriented persistence	0.612	0.846 (0.714–0.917)	0.000	41
Gross motor persistence	0.732	0.888 (0.791–0.940)	0.000	
Social persistence with adults	0.591	0.787 (0.603–0.885)	0.000	
Social persistence with children	0.665	0.853 (0.726–0.921)	0.000	
Mastery pleasure	0.623	0.712 (0.464–0.845)	0.000	
Negative reactions frustration/anger	0.553	0.878 (0.773–0.934)	0.000	
Negative reactions sadness/shame	0.533	0.678 (0.215–0.773)	0.000	
General competence	0.684	0.771 (0.575–0.877)	0.000	
Total	0.880	0.833 (0.689–0.910)	0.000	

ICC: Intraclass correlation coefficient, CI: Confidence interval, DMQ18: Dimensions of Mastery Questionnaire 18

Cronbach's alphas for the test-retest reliability was acceptable at all subscales (ICC = 0.985–0.887).

According to Table 4, which shows comparisons of the mean scores for parents and their children on the DMQ subscales, there was a significant difference between the two groups in social persistence with adults, mastery pleasure, negative reaction- sadness/shame, general competence, negative reaction- frustration/anger subscales, and also the total score ($P < 0.05$) For the social persistence with children ($P = 0.057$), cognitive-oriented persistence ($P = 0.060$) and gross motor persistence ($P = 0.053$) subscales, the means were not significant. In general, the parent's means were lower than their children's on the expressive or emotional aspects of mastery motivation, and on the competence and total DMQ scores [Table 4]. However, the parent's means were lower on only one of the four instrumental or persistence subscales.

Taking a more in-depth look at the mean scores in Table 4, the lowest motivation was seen in negative reaction- sadness/shame (2.957 ± 0.946) rated by parents, and the highest motivation score was seen in mastery pleasure (4.586 ± 1.186) rated by the children themselves. The parents also rated themselves quite high (above 4.0) on mastery pleasure and the children rated themselves above 4.0 on social persistence with adults.

The most significant difference was seen between parents (2.957 ± 0.946) and their children (3.379 ± 0.786) on the negative reaction- frustration/anger subscale, and there was also a significant difference between the views of parents and their child on the negative reaction sadness/shame subscale. In both cases, as mentioned above, the children rated themselves much higher on these two negative reaction subscales [Table 4].

DISCUSSION

This research was the first study on the comparison of parents' and their children's views of the children's

Table 3: Cronbach's alphas (n=114) and intraclass correlation coefficient (n=32) of the Dimensions of Mastery Questionnaire 18 subscale for children

DMQ18 Subscales	Cronbach's alpha	ICC (95%CI)	P	df
Cognitive oriented persistence	0.690	0.914 (0.825–0.957)	0.000	32
Gross motor persistence	0.781	0.887 (0.772–0.944)	0.000	
Social persistence with adults	0.667	0.933 (0.864–0.967)	0.000	
Social persistence with children	0.672	0.947 (0.893–0.974)	0.000	
Mastery pleasure	0.677	0.935 (0.869–0.968)	0.000	
Negative reactions frustration/anger	0.702	0.985 (0.969–0.992)	0.000	
Negative reactions sadness/shame	0.594	0.973 (0.945–0.987)	0.000	
General competence	0.802	0.973 (0.946–0.987)	0.000	
Total DMQ	0.745	0.943 (0.911–0.975)	0.000	

ICC: Intraclass correlation coefficient, CI: Confidence interval, DMQ18: Dimensions of Mastery Questionnaire 18

Table 4: Comparisons of mean scores for 114 parents and their child

DMQ18 subscales	Children			Parents	
	n	Mean±SD	P	n	Mean±SD
Cognitive oriented persistence	114	3.703±0.876	0.060	114	3.823±0.720
Gross motor persistence		4.201±0.872	0.053		4.188±0.822
Social persistence with adults		4.033±0.786	0.002		3.697±0.746
Social persistence with children		3.848±0.859	0.057		3.783±0.810
Mastery pleasure		4.586±1.186	0.017		4.245±0.914
Negative reaction frustration/anger		3.892±1.009	0.000		3.189±1.328
Negative reaction sadness/shame		3.379±0.786	0.000		2.957±0.946
General competence		3.896±0.813	0.045		3.677±0.795
Total		3.946±0.560	0.016		3.724±0.606

DMQ18: Dimensions of Mastery Questionnaire 18, SD: Standard deviation

mastery motivation in Iran. Significant differences were found between views of parents and their children, with children rating themselves somewhat higher, on the social persistence with adults' subscale, and all three expressive or emotional subscales and total scores.

This indicates that parents and their children had different views on several (but not all) dimensions of the child's mastery motivation and their competence/ability. Generally, this study showed little significant difference between parents and children's ratings on the instrumental subscales of DMQ18, which represents the child's persistent efforts at problem solving.

We think that these results show that Iranian parents may be underestimating their child's emotional behaviors related to mastery motivation and the child's competence. Perhaps these Iranian children are hesitant to show mastery pleasure, and negative reactions to challenge in front of their parents.

These findings are not consistent with the data reported by Morgan *et al.*, who found that both Chinese and English-speaking parents rated their children higher than their children rated themselves on the persistence with adults and mastery pleasure subscales;^[3] in the current study, the children rated themselves higher than the parents did on these subscales.

Morgan *et al.* also found that English and Chinese children gave higher scores than their parents on cognitive and gross motor persistence subscales; in the current study, there was not a significant difference in these subscales.

Correspondingly, to Morgan *et al.* results in cognitive and gross motor persistence, Jozsa *et al.* reported that parents of Hungarian students gave their children lower scores than their children gave themselves. However, parents rated their children higher on mastery pleasure, and social mastery motivation.^[21] Both of these results are different from the results of the current Iranian study. It should be noted that the Morgan *et al.* and Jozsa *et al.* studies were based on the DMQ17, which could, in part, be the reason for the results of this Iranian study being mostly inconsistent with the Morgan *et al.* and Jozsa *et al.* studies.

In terms of competence, Iranian children gave higher scores than their parents gave them. This result was consistent with results by Chinese parents in the study by Morgan *et al.*^[22] Thus, some results by Morgan *et al.* were consistent with our research.

Finally, children gave themselves higher scores than their parents gave them on the total DMQ score. Therefore, views of parents and children were different on this overall score, which includes both mastery motivation and general competence.

The difference in views on the total score between parents and their child can indicate a problem in the parent-child relationship because parents' perception of their child's competence strongly predicts the child's competence.^[23] Although competence is not the same as mastery motivation, the two concepts are correlated.^[24]

Significant differences in the social persistence with adults, mastery pleasure, negative reaction- sadness/shame, general competence, and negative reaction-frustration/anger subscales can be the result of the unique experiences and perceptions that parents and children have regarding mastery motivation.^[17] We think one of the reasons for this difference could be that during the transition to early adulthood from early adolescence, friendships acquire a deeper meaning, become more stable, and become more independent of your parents.^[25]

The difference in the expressive aspects of mastery motivation could be since parents spend less time with their child and therefore, may not be able to see the child's emotional reactions, or children refuse to show emotional reaction in the presence of the parents.

There is not enough information about the reliability and validity of DMQ 18 (rated both by adults and the children themselves). Thus we used the information about the DMQ17, which is similar to DMQ18.^[20] Morgan *et al.* reported that each of four DMQ 17 persistence scales and mastery pleasure scale had acceptable to good internal consistency (alphas >0.74) for English and Chinese parents. Alphas for children were somewhat lower (0.67–0.85) at these five scales. The alphas for negative reactions to failure and competence were lower (0.60–0.86) with a median of 0.70, probably because some of the English-speaking children were 5–7 years old, and they were too young to understand the self-ratings of their motivation entirely.^[22]

In the present research on the parent DMQ ratings of their children, we found that Cronbach alphas ranged from 0.533 (negative reactions-sadness/shame) to 0.732 (gross motor persistence), but the Cronbach alphas for total score was much higher at 0.880. Test-retest reliability was acceptable at all subscales except for negative reactions-sadness/shame, where it was minimally acceptable.

We also found that in DMQ18, which was self-rated by children, the Cronbach alpha ranged from 0.594 (negative reactions- sadness/shame) to 0.781 (gross motor persistence) at subscales; and Cronbach alpha for total score was 0.745. The test-retest correlation was acceptable at all subscale. Thus, test-retest reliability was acceptable

to good for almost all subscales for both parent and child ratings, as it has been in the DMQ literature.^[20]

One reason for some lower alphas on the persistence and mastery pleasure subscales was that we did not eliminate any item in our research, in order to increase the reliability, because we aimed to report the reliability using the same variables as Morgan *et al.*^[20] It seems likely that one or a few items in several of the DMQ subscales were not fully culturally appropriate for children in Iran, which may have led to somewhat lower alphas.

Study limitation

The limitation of this study was that the families were selected only from governmental schools, which could not represent all the families with school-age children, and number of schools were selected to participate in the study.

CONCLUSION

Józsa *et al.* reported that for most children in Hungary, China, and the US, mastery motivation declined from ages 9–11 (the main ages in the current Iranian study) to 16–18.^[11,13,14] This is a problem not just for parents in schools, but also for healthcare professionals, including nurses, because these declines occurred for most dimensions of mastery motivation and incompetence. Thus, not only was persistence at cognitive tasks and school work lower for adolescents, but also mastery motivation related to attempts to interact effectively with other children and adults, such as parents, teachers, and presumably healthcare workers, was lower.

Because low current mastery motivation leads to later lower social and cognitive competence,^[9,13] it is important to understand both children's and parents' views of their mastery motivation and competence. In this study, the mean ratings for parents and their children were different on most subscales and on the total DMQ score. In order to enhance students' mastery motivation, disagreements between parents and their children should be discussed and resolved because they probably indicate areas where intervention is needed. In addition, dimensions on which the child and parent both view the child's motivation or competence as relatively low could be an indicator for healthcare professionals and educators to set goals for improvement in school and everyday life.

Conflicts of interest

There are no conflicts of interest.

Authors' contribution

All authors contributed equally to the writing of the

scientific proposal, data collection, and manuscript drafting. The final manuscript was reviewed and approved by all the authors

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REFERENCES

- Rosenbaum P, Stewart D. The World Health Organization international classification of functioning, disability, and health: A model to guide clinical thinking, practice and research in the field of cerebral palsy. *Semin Pediatr Neurol* 2004;11:5-10.
- Bartlett DJ, Palisano RJ. Physical therapists' perceptions of factors influencing the acquisition of motor abilities of children with cerebral palsy: Implications for clinical reasoning. *Phys Ther* 2002;82:237-48.
- Morgan GA, Busch-Rossnagel NA, Barrett KC, Wang J. *The Dimensions of Mastery Questionnaire (DMQ 17): A Manual about its Development, Psychometrics, and Use*. Fort Collins: Colorado State University; 2009.
- MacTurk RH, Morgan GA, Jennings KD. The Assessment. In: *Mastery motivation: Origins, Conceptualizations, and Applications*. Vol. 12. Ablex Publishing Corporation, Norwood, New Jersey; 1995. p. 19.
- Hauser-Cram P, Shonkoff JP. Mastery motivation: Implications for interventions. *Mastery motivation: Origins, conceptualizations, and applications*. 1995:257-72.
- White RW. Motivation reconsidered: The concept of competence. *Psychol Rev* 1959;66:297.
- Dunn N, Shields N, Taylor NF, Dodd KJ. Comparing the self concept of children with cerebral palsy to the perceptions of their parents. *Disabil Rehabil* 2009;31:387-93.
- Shaoli SS, Islam S, Haque S, Islam A. Validating the bangla version of the dimensions of mastery questionnaire (DMQ-18) for preschoolers. *Asian J Psychiatry* 2019;44:143-9.
- Morgan GA, Józsa K, Liao HF. Introduction to the HERJ special issue on mastery motivation: Measures and results across cultures and ages. *Hung Educ Res J* 2017;7:5-14.
- Józsa K, Morgan GA. An improved measure of mastery motivation: Reliability and validity of the Dimensions of Mastery Questionnaire (DMQ 18) for preschool children. *Hung Educ Res J* 2015;5:87-103.
- Józsa K, editor. *The Development of Mastery Motivation at Age 10-16*. Budapest: 12th Biennial Conference for Research on Learning and Instruction, August; 2007.
- Józsa K, Molnár ÉD. The relationship between mastery motivation, self-regulated learning, and school success: A Hungarian and wider European perspective. In K. C. Barrett, N. A. Fox, G. A. Morgan, D. J. Fidler, & L. A. Daunhauer (Eds.), *Handbook of self-regulatory processes in development: New directions and international perspectives*. Psychology Press 2013: 265–304. <https://doi.org/10.4324/9780203080719.ch13>.
- Jozsa K, Morgan GA. Developmental changes in cognitive persistence and academic achievement between grade 4 and grade 8. *Eur J Psychol Educ* 2014;29:521-35.
- Jozsa K, Wang J, Barrett KC, Morgan GA. Age and cultural differences in self-perceptions of mastery motivation and competence in American, Chinese, and Hungarian school age children. *Child Dev Res* 2014;2014:doi.org/10.1155/2014/803061.
- van Wietmarschen M. *Mastery Motivation of Children and Teens: Parental Versus Self-report*; 2014.
- Niccols A, Atkinson L, Pepler D. Mastery motivation in young children with Down's syndrome: Relations with cognitive and adaptive competence. *J Intellect Disabil Res* 2003;47:121-33.
- Miller L, Ziviani J, Boyd RN. A systematic review of clinimetric properties of measurements of motivation for children aged 5-16 years with a physical disability or motor delay. *Phys Occup Ther Pediatr* 2014;34:90-111.
- Igoe D, Peralta C, Jean L, Vo S, Yep LN, Zabjek K, *et al.* A pilot evaluation of the test-retest score reliability of the Dimensions of Mastery Questionnaire in preschool-aged children. *Infants Young Child* 2011;24:280-91.
- World Health Organization. *Process of Translation and Adaptation of Instruments*; 2009. Available from: http://www.who.int/substance_abuse/research_tools/translation/en. [Last accessed on 2021 Jan 24].
- Morgan GA, Liao HF, Szombathelyiné Nyitrai ÁA, Huang SY, Wang PJ, Józsa K. The revised Dimensions of Mastery Questionnaire (DMQ 18) for infants and preschool children with and without risks or delays in Hungary, Taiwan, and the US. *Hungarian Educational Research Journal (HERJ)* 2017;7(2):48-67.
- Józsa K. *Az Elsajátítási Motiváció*. Budapest: Műszaki Kiadó; 2007.
- Morgan GA, Wang J, Liao H-F, Xu Q. Using the Dimensions of Mastery Questionnaire (DMQ) to assess mastery motivation of English- and Chinese-speaking children: Psychometrics and implications for self-regulation. *Handbook of self-regulatory processes in development: New directions and international perspectives*. New York, NY, US: Psychology Press; 2013. p. 305-35.
- Pomerantz EM, Grolnick WS, Price CE. The Role of Parents in How Children Approach Achievement: A Dynamic Process Perspective. *Handbook of competence and motivation*. New York, NY, US: Guilford Publications; 2005. p. 229-78.
- Morgan GA, Busch-Rossnagel NA, Barrett KC, Wang J. *The Dimensions of Mastery Questionnaire (DMQ 17): A Manual about its Development, Psychometrics, and Use*. Fort Collins: Colorado State University; 2014.
- Poulin F, Chan A. Stability and changes in children and adolescents friendships. *Dev Rev* 2010;30:257-72.