
Assessing Mastery Motivation in Children Using the Dimensions of Mastery Questionnaire (DMQ)

Editors

**George A. Morgan, Hua-Fang Liao and
Krisztián Józsa**



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Szent István University
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Chapter 3

Overview of DMQ 18, Current Research, and Preliminary Norms

*Su-Ying Huang, Hua-Fang Liao, Krisztián Józsa, Marcela Calchei,
Saide Özbey and George A. Morgan*

Introduction

As described in the previous chapter about development of the revised Dimensions of Mastery Questionnaire (DMQ 18), this current version of the questionnaire improved and expanded on the international focus of the Dimensions of Mastery Questionnaire (DMQ 17). This improvement was based in part on examination of the methodological invariance of the scales in DMQ 17. The development of the current version also used an approach sometimes called decentering, in which not only the Hungarian and Chinese versions of DMQ 18, but also the English version were modified somewhat based on the feedback from developmental experts and a few parents in each of the three countries (US, Taiwan and Hungary). Thus, this careful adaptation of DMQ 18 increased the content validity of DMQ 18 as a basis for translation into a number of other cultures and languages.

DMQ 18 has the same seven scales and uses the same Likert-type items rated 1-5 (from (1) not at all like this child to (5) exactly like this child), as did DMQ 17. DMQ 18 has three current official language versions: English,

Chinese, and Hungarian, as well as translations, for which we have results, into Central American Spanish, Bahasa Indonesian, Bangla (also known as Bengali), Hebrew, Persian (known in the US as Farsi), Turkish, Kiswahili (known in English as Swahili), Russian, Romanian, and Portuguese. The DMQ 18 forms for the three official languages and scoring instructions are presented in the appendix of this book. DMQ 18 forms for all of the above languages, plus French-Canadian, German, Spanish-Argentinian are available in an online appendix.

DMQ 18 Versions, Scales and Items

In each of the three official languages, there are four parallel age-related versions of DMQ 18 (infant, preschool, school-age by adult-rating, and school-age by self-rating). See Table 3.1.

The **infant** version (38 items) is rated by an adult for children of developmental ages approximately 6-23 months. The **preschool** version (39 items) is rated by an adult for children of developmental ages approximately 2-6 years, but some children as young as 18 months have been rated using the preschool version. The **school-age by adult-rating** version (41 items) is for students from 1st grade (usually 6 or 7 years old) through high school rated by an adult (parent and/or teacher). The **school-age by self-rating** version has the same 41 items rephrased to enable students from approximately 3rd grade through high school to rate themselves. Because studies using DMQ 17 and related concepts have indicated that it is difficult to get reliable and valid self-reports from children 8 years old and younger, we don't recommend self-rated DMQs by first and second grade students. However, some researchers have read the items to first and second graders and/or used visual aids such as smiley to frowning "faces" to help younger children understand what they are asked to rate.

As shown in Table 3.1, DMQ 18 has seven scales for all three age groups. The DMQ 18 age-related versions have a number of items that are the same across each of the three age versions and most of the rest of the items are similar across the three age versions, as shown in Table 2.4 of **Chapter 2**.

Table 3.1. The Four Age-Related Versions of the DMQ 18

DMQ 18 versions	Approximate age range	Number of items	Number of scales
Infant version	6 - 23 months	38	7
Preschool version	2 - 6 years	39	7
School-age by adult-rating version	6 - 18 years	41	7
School-age by self-rating version	9 - 18 years	41	7

Table 3.2 lists the DMQ 18 scales and item numbers of three age versions. These are a Competence scale and six mastery motivation scales: 1) Cognitive/Object Persistence, 2) Gross Motor Persistence, 3) Social Persistence with Adults, 4) Social Persistence with Children, 5) Mastery Pleasure, and 6) Negative Reactions to Challenge in mastery situations. The Negative Reactions scale was intended to have two subscales: Frustration/Anger and Sadness/Shame, but especially the Negative Reactions Sadness/Shame subscale frequently had inadequate internal consistency reliability and both subscales were hard to interpret. Therefore, the Negative Reactions to Challenge scale is not subdivided into the two subscales in most of the tables and analysis presented in this book, nor is it shown in Appendix B on how to score DMQ 18. It is possible that any future version of the DMQ will include an expanded and more differentiated Negative Reactions to Challenge scale.

Table 3.2. DMQ 18 Scales and Numbers of Items on Each of the Three Versions

Scale name	Number of items		
	Infant	Preschool	School-age
Instrumental scales			
1. Cognitive/Object Persistence	6	5	6
2. Gross Motor Persistence	5	5	5
3. Social Persistence with Adults	6	5	6
4. Social Persistence with Children	6	6	6
Expressive scales			
5. Mastery Pleasure	5	5	5
6. Negative Reactions to Challenge	5	8	8
Competence scale			
7. General Competence	5	5	5

Table 3.2 also shows that the seven scales in each of the three age-related versions include four scales for the **instrumental** or persistence aspects of mastery motivation, two scales for the **expressive** or affective aspects of mastery motivation, and one scale to assess competence or the *ability* to master in contrast to the *motivation* to master tasks. The Competence scale

is not considered to be a measure of mastery motivation, so one should never compute an overall DMQ score based on the average or sum of all seven scales. A total persistence score, based on the average of the four persistence scales, is appropriate.

Table 3.3 shows that 11 of the DMQ 18 items are the same across all three age versions and four were the same only for the preschool and school-age versions because there were no Negative Reactions Sadness/Shame (NRS) items for the infant version. Negative Reaction Anger/Frustration (NRA) and NRS, were combined to form the Negative Reactions to Challenge (NRC) scale in the preschool and school-age versions.

Table 3.3. Items That Are the Same Among Different Age Versions of DMQ 18

Item No.	Scale	Item
Items the same across all three age versions		
6	SPC	Tries (hard) to make other kids feel better...
7	SPC	Tries to do (or say) things that keep other kids interested
9	NRA	Frustrated when not able to complete a challenging task
12	GMP	Tries to do well in physical activities even when they are challenging (or difficult)
18	MP	Gets excited when figures something out
20	COM	Does things that are difficult for his/her age
22	SPA	Tries (hard) to get adults to understand him/her
23	COP	Works for a long time trying to do something challenging
25	SPC	Tries (hard) to understand other children
27	COM	Does most things better than others his/her age
41 S, 19 P, 34 I	NRA	Gets angry if cannot do something after trying (hard)
Items the same in the preschool and school-age versions		
5	NRS	Sad or ashamed when he or she doesn't accomplish a goal
24	NRS	Won't look people in the eye when cannot do something
34	NRS	Looks away when tries but cannot do something
39	NRS	Withdraws after trying but not succeeding

Note. COP = Cognitive/Object Persistence; COM = General Competence; GMP = Gross Motor Persistence; MP = Mastery Pleasure; NRA = Negative Reactions Anger/Frustration; NRS = Negative Reactions Sadness/Shame; I = Infant; P = Preschool; S = School age; SPA = Social Persistence with Adults; SPC = Social Persistence with Children.

Tables 3.4 shows that almost all the remaining items were similar across the three age group versions of DMQ 18 except for Item 19 of the infant and school-age versions and Item 40 of the school-age version.

Table 3.4. Items That Are Similar Across the Infant, Preschool, and School-Age Version of DMQ 18

Item No.	Scale	Infant	Preschool	School-age
1	COP	Repeats a new skill until can do it	Repeats a new skill until can do it	Works on a new problem until can do it
2	MP	Smiles broadly after finishing something	Smiles broadly after finishing something	Is pleased with self when finishes something challenging
3	GMP	...physical activities	...motor activities	...athletic games
4	COM	Learns things quickly compared to...	Solves problems quickly compared to...	Solves problems quickly compared to...
8	SPA	"Talks" to keep adults interested	Talks to keep adults interested	Often discusses with adults...
10	COM	Is developing faster...	Very good at most things	Very good at most things
11	MP	Claps when successful	Shows excitement	Gets excited
13	NRC	Frustrated when not successful immediately	Frustrated when does not do well at something	Frustrated when does not do well at something
14	COP	Tries even if takes long	Complete tasks...	Completes school work...
15	SPA	Interests adults in playing	Interests adults in playing	Interests adults in activities
16	NRC	Screams/yell after failing	Protests after failing	Protests after failing
17	COP	Explores all parts of a toy or object	Tries to complete puzzle even if hard	Tries to figure...all steps needed to solve a problem
21	MP	Smiles or gets excited when playing with a toy	Pleased when solves challenging problem	Pleased when solves hard problem
26	GMP	Repeats skills related to moving until...	Repeats skills like jumping/running until...	Repeats sports skills until...
28	SPC	Connect with familiar children	Make friends	Make friends
29	COP	Work for a long time...get something open	Work for a long time...put something together	Will work for a long time...solve a problem for school
30	MP	Smiles when makes something happen	Smiles when makes something happen	Smiles when succeeds at something tried hard to do
31	COM	Understands things better than...his/her age	Understand things well	Understand things well
32	SPC	Get included when...playing	Get included when...playing	Get included when...doing something
33	SPA	Tries to find out what adults like...	Tries to figure out what adults like...	Tries to find out what adults like ...
35	SPC	Tries to start play	Keep play going...	Keep things going
36	GMP	Repeats motor skills	Tries to get better at physical activities	Tries hard to get better at sports
37	SPA	Tries hard to understand my feelings	Tries hard to understand my feelings and other adults	Tries hard to understand the feelings of adults
38	GMP	Tries to retrieve objects	Tries to improve throwing/kicking	Tries to improve ball game skills

Note. Item 40 on the school-age version does not have a similar infant or preschool item. Item 19 of infant and school versions are different. COP = Cognitive/Object Persistence; COM = General Competence; GMP = Gross Motor Persistence; MP = Mastery Pleasure; NRC = Negative Reactions to Challenge; SPA = Social Persistence with Adults; SPC = Social Persistence with Children.

Current DMQ 18 Studies

There are a number of researchers in the US, Hungary, Taiwan, Australia, Indonesia, Iran, Turkey, Kenya, Republic of Moldova (which included Russian and Romanian speakers), and Bangladesh who have collected DMQ 18 data and written or presented about it. Several of these studies are not yet published.

Tables 3.5-3.10 expand information about almost all of these studies; the tables are divided by the country from which DMQ 18 data was collected. Each table shows the DMQ age version used, the type of raters, the characteristics or developmental status and age of the children whose mastery motivation was assessed, the number of children in each group, and a reference for the source of the data.

Table 3.5 provides information about the characteristics of the US samples, which includes data by Blasco and colleagues based on DMQ 18 parent ratings of American infants and toddlers who were born low birth weight and preterm or full term. In addition, Saxton et al. (2020) reported parent ratings comparing infants and toddlers born preterm and very low birth weight (VLBW) or preterm and moderately low birth weight (LBW) on DMQ 18. Ramakrishnan (2015) studied preschoolers in a homeless shelter rated by their mothers. Wang and Lewis (2019) reported data from parents of typical preschool children.

Table 3.5. Characteristics of the DMQ 18 Samples in the US

DMQ 18 version / Rater	Characteristics and age in months (m) or years (y) (M±SD)	n	References
Infant version and preschool version Raters: parents	FT: 5.8±0.06m LBW: M = 7.1m (5.7 to 8.9m)	FT: n = 13 LBW: n = 15	Blasco et al. (2018)
Infant version Raters: parents	FT: M = 6m LBW: M = 7.9m VLBW: M = 8.5m	FT: n = 41 LBW: n = 35 VLBW: n = 64	Blasco et al. (2020)
Infant version and preschool version Raters: parents or caregivers	PT: 0.66±0.05y FT: 0.58±0.06y	N = 121 PT: n = 56 FT: n = 29	Blasco & Guy (2016) published in Morgan et al. (2017)
Infant version and preschool version Raters: parents	Infants and toddlers with LBW or VLBW 14m ±8.23m Infant: M = 10m Toddler: M = 26.7m	Infant: n = 178 Toddler: n = 55	Saxton et al. (2020)
Preschool version Raters: mothers	Homeless shelter with their mothers: 3.86±0.75y (3 to 5y)	n = 36	Ramakrishnan (2015) published in Morgan et al. (2017)
Preschool version Raters: caregivers	TD: 46.90± 6.50m (36 to 60m)	n = 57	Wang & Lewis (2019)

Note. FT = full-term; LBW = low birth weight; PT = preterm; TD = children developing typically; VLBW = low birth weight.

Table 3.6 includes studies from Hungary. Józsa and Morgan (2015) used preschool teachers' ratings; Morgan et al. (2017) used data provided by Józsa & Nyitrai (2016) on young Hungarian preschoolers rated by a parent. Józsa and colleagues collected data from children's self-reports and parent ratings on 4th grade school-age students in Hungary.

Table 3.6. Characteristics of the DMQ 18 Samples in Hungary

DMQ 18 version / Respondents	Characteristics and age in months (m) or years (y) (M±SD)	n	References
Preschool version Raters: teachers	TD 3y group: 42.3±2.7m 4y group: 53.4±3.7m 5y group: 65.7± 3.6m 6y group: 77.3 ±2.99m	n = 211 3y: n = 58 4y: n = 53 5y: n = 48 6y: n = 52	Józsa & Morgan (2015)
Preschool version Raters: parents	TD Children 3.50±0.47y Toddlers with parent HE 2.24± 0.46y Toddlers with parent LE 2.29±0.45y	n = 172 HE: n = 127 LE: n = 45	Józsa & Nyitrai (2016) published in Morgan et al. (2017)
School-age self-rating and adult-rating versions Raters: students and parents	TD: 4th grade (10-11y)	n = 140	Józsa (2019)

Note. HE = high education; LE = low education; TD = children typically developing.

Table 3.7 includes studies from Taiwan. Several articles by Wang and colleagues reported DMQ 18 results for 2-4 year-old children in Taiwan with global developmental delay; Huang and colleagues provided data on a number of studies from parents of preschool children with and without delays and also from teacher and child-self ratings of typically developing 5th to 10th grade school-age children in Taiwan.

Table 3.7. Characteristics of the DMQ 18 Samples in Taiwan

DMQ 18 version / Respondents	Characteristics and age in months (m) or years (y) (M±SD)	n	References
Preschool version Raters: mothers	DD: 32.50±5.1m (24 to 43m)	n = 62	Wang et al. (2016)
Preschool version Raters: caregivers	DD and TD: 18 to 53m	n = 85 DD: n = 40 TD: n = 45	Huang et al. (2016a) partially published in Morgan et al. (2017)
Preschool version Raters: parents	DD: M = 32.78m TD: M = 36.12m	n = 74 DD: n = 49 TD: n = 25	Huang et al. (2016b) partially published in Morgan et al. (2017)
Preschool version Rater: mothers	DD: 33.90±9.77m (18 to 48m)	n = 50	Chang et al. (2017) partially published in Morgan et al. (2017)
Preschool version Rater: mothers	TD: M = 2.89y (1.75 to 3.83y)	n = 66	Huang et al. (2018) partially published in Morgan et al. (2017)
Preschool version Rater: parents	TD: 52.45±13.81m (24 to 79m)	n = 120	Huang & Lo (2019) partially published in Morgan et al. (2017)
Preschool version Raters: mothers	Children with SELD and TD: 2.91±0.55y (1.5 to 4y)	n = 75 SELD: n = 40 TD: n = 35	Huang et al. (2019)
Preschool version Raters: parents	Toddlers with ELD: 31.75±6.11m (19 to 42m)	n = 56	Chang et al. (2020)
Preschool version Raters: parents	DD: 56.57±11.98m (31 to 80m)	n = 110	Huang & Chen (2020)
School-age by self-rating and by adult-rating versions Raters: students and/or teachers	TD: 5th to 8th grade (10 to 13y)	Students: n = 255 Teacher: n = 66	Huang & Peng (2015)
School-age by self-rating version Raters: students	TD: 5th to 6th grade (10 to 11y)	n = 192	Huang (2019)
School-age by self-rating version Raters: students	TD: 10th grade (16y)	n = 235	Huang & Peng (2020)

Note. DD = developmental delay; ELD = expressive language delay; MD = mental delay; SELD = suspected expressive language delay; TD = children typically developing.

Table 3.8 provides information about studies in Iran. Salavati et al. (2018a, b) published papers on DMQ 18 parent ratings of 10-11 year-old children with cerebral palsy and also typically developing children of the same ages. Gharib et al. (2021) reported DMQ 18 data from Iranian parents and also self-reports by their 10-11 year-old children who were developing typically.

Table 3.8. Characteristics of the DMQ 18 Samples in Iran

DMQ 18 version / Respondents	Characteristics and age in months (m) (M±SD)	n	References
School-age by adult-rating version Raters: parents	CP: 127.1±24.6m TD: 128.1±15.9m	n = 441 CP: n = 229 TD: n = 212	Salavati et al. (2018a)
School-age by adult-rating version Raters: parents	CP:126.99±24.59m	n = 230	Salavati et al. (2018b)
School-age by self-rating and by adult-rating versions Raters: parents and children	TD:127.25±16.03m	n = 114	Gharib et al. (2021)

Note. CP = cerebral palsy; TD = children typically developing.

Table 3.9 shows information about eight publications by Özbey and colleagues, three in English. These studies provided teacher ratings of Turkish preschool children's mastery motivation.

Table 3.9. Characteristics of the DMQ 18 Samples in Turkey

DMQ 18 version / Respondents	Characteristics and age in months (m)	n	References
Preschool version Rater: teachers	TD: 36 to 72m	n = 207	Özbey & Dağlıoğlu (2017)
Preschool version Rater: teachers	TD: 48 to 72m	n = 219	Özbey (2018a)
Preschool version Rater: teachers	TD: 48 to 72m	n = 270	Özbey (2018b)
Preschool version Rater: teachers	TD: 60 to 72m	n = 300	Türkmen & Özbey (2018)
Preschool version Rater: teachers	TD: 48 to 60 m	n = 16	Özbey & Köyceğiz (2019)
Preschool version Rater: teachers	TD: 48 to 72m	n = 304	Özbey & Aktemur Gürler (2019)
Preschool version Raters: teachers	TD: 48 to 72m	n = 387	Köyceğiz & Özbey (2019)
Preschool version Rater: teachers	TD: 48 to 72m	n = 331	Gözübüyük & Özbey (2019)

Note. TD = children typically developing.

Table 3.10 provides information about DMQ 18 studies by researchers in five other countries using six languages. Rahmawati et al. (2020) have written a manuscript supporting the reliability and validity of DMQ 18 for preschool children in Indonesia. Shaoli et al. (2019) published a paper on the Bangla preschool DMQ 18. The Hines (2018) dissertation study included DMQ 18 data on children aged 8-16 years with cerebral palsy in Australia.

Calchei et al. (2020) have collected DMQ data about Moldovan school-age children who speak Russian or Romanian. Amukune et al. (2020) collected data in Kenya about preschool children.

Table 3.10. Characteristics of the DMQ 18 Samples from Other Countries

DMQ 18 version / Respondents	Characteristics and age in years (y)	n	References
Indonesia Preschool version Rater: mothers	TD: 5 to 7y	n = 417	Rahmawati et al. (2020)
Bangladesh Preschool version Raters: parents and teachers	TD: 3 to 6y	n = 206	Shaoli et al. (2019)
Australia School-age by adult-rating version Raters: mothers	CP: 8 to 16y	n = 20	Hines (2018)
Republic of Moldova School-age by self-rating and adult-rating version Raters: students and teachers	TD: 5th grade (11y) Romanian speaking Russian speaking	Romanian-speaking: n = 150 Russian-speaking: n = 167	Calchei et al. (2020)
Kenya Preschool version Raters: parents or teachers	TD: 5-12y (Majority 5-6y, 86% were 5-8y)	parents: n = 50 teachers: n = 397	Amukune et al. (2020)

Note. CP = cerebral palsy; TD = children typically developing.

Preliminary Norms for DMQ 18 from Children Developing Typically

Tables 3.11-3.16 show the means and standard deviations (SD) from various language samples used to develop preliminary age-group norms for the pre-school and school-age versions of DMQ 18. These tables are based on several studies from Taiwan, Hungary, the US, Kenya, Bangladesh, Iran, Turkey, Indonesia, and Moldova (which included Russian and Romanian speakers). There are separate tables for parent ratings and teacher ratings of preschool children. There are also separate tables for self-ratings, parent ratings, and teacher ratings of the younger (10-12 years) school-aged children. The table for the older (7th-10th grade) school-age children is all child-self ratings from Taiwan.

The first column in each table shows the DMQ scales; the middle two to five columns show sample mean and SD ratings separately by country or language in the case of Russian and Romanian (in Moldova). For each table, there is a final column that is M (SD) of a preliminary norm for that table based on the ratings from each of the samples in that table. To combine means of different samples, the average mean of all samples is used.

The samples shown in Table 3.11 through Table 3.16 are those currently available for typically developing children assessed with DMQ 18. Although they are not based on typical test-standardization samples, we think that they provide useful information, perhaps especially for clinicians as discussed in **Chapter 7** and **Chapter 8**. The samples were, except in Turkey and Hungary, not drawn randomly and these are not a random selection of countries from around the world. Furthermore, the samples from each country are not equal in size. For example, there is a much smaller sample from the US in Table 3.11 than from Taiwan, Hungary, and Indonesia. In fact, there are no other US samples in these tables. Although these are not fully representative, they do represent a large number of children from a wide variety of countries.

Note that the norms for means weight each country equally. When we computed the mean weighting each child equally, there was little difference in the resulting preliminary norm. As more DMQ 18 data comes available, we hope to update these norms and make them available in the online appendix to this book.

Preschool Norms for Children Developing Typically

The preliminary norms for DMQ 18 preschool version rated by parents (n = 771) and separately by teachers (n = 2406) are shown in Table 3.11 and Table 3.12.

Table 3.11. Norms for DMQ 18 Preschool Version Rated by Parents of Children Developing Typically

	Taiwan^a (n = 145)	Hungary^b (n = 152)	US^c (n = 57)	Indonesia^d (n = 417)	Preliminary norm^e (n = 771)
DMQ Scales	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Instrumental scales					
COP	3.44 (0.74)	3.50 (0.88)	3.78 (0.64)	3.01 (0.92)	3.43 (0.80)
GMP	3.77 (0.69)	4.17 (0.81)	4.15 (0.53)	3.11 (1.03)	3.80 (0.77)
SPA	3.79 (0.66)	3.92 (0.75)	4.20 (0.49)	3.00 (1.05)	3.73 (0.74)
SPC	3.57 (0.70)	3.59 (0.81)	3.93 (0.72)	2.87 (0.99)	3.49 (0.81)
Expressive scales					
MP	4.56 (0.45)	4.43 (0.62)	4.64 (0.44)	3.11 (0.92)	4.19 (0.61)
NRC	3.43 (0.66)	3.06 (0.81)	3.06 (0.70)	-	3.18 (0.72)
COM	3.59 (0.63)	4.07 (0.61)	3.91 (0.52)	-	3.86 (0.59)

Note. Sources from ^aHuang & Lo (2019); ^bMorgan et al. (2017); ^cWang & Lewis (2019); ^dRamawati et al. (2020); ^eFor the norm mean (*M*), each country was weighted equally ($M = (T + H + U + I)/4$), and a usual weighted formula was used for the norm of the standard deviation. COP = Cognitive/Object Persistence; COM = General Competence; GMP = Gross Motor Persistence; MP = Mastery Pleasure; NRC = Negative Reactions to Challenge; SPA = Social Persistence with Adults; SPC = Social Persistence with Children.

Table 3.12. Norms for DMQ 18 Preschool Version Rated by Teachers of Children Developing Typically

DMQ Scales	Hungary ^a (n = 211)	Kenya ^b (n = 397)	Bangladesh ^c (n = 206)	Turkey ^d (n = 1592)	Preliminary norm ^e (n = 2406)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Instrumental scales					
COP	3.58 (0.81)	4.05 (0.70)	4.12 (0.74)	3.76 (0.92)	3.88 (0.79)
GMP	3.81 (0.95)	3.80 (0.75)	3.52 (0.96)	3.97 (0.84)	3.78 (0.88)
SPA	3.52 (0.91)	3.66 (0.71)	3.71 (0.72)	3.57 (0.94)	3.62 (0.82)
SPC	3.74 (0.70)	3.98 (0.65)	3.98 (0.76)	3.67 (0.84)	3.84 (0.74)
Expressive scales					
MP	4.10 (0.64)	4.32 (0.73)	4.28 (0.48)	4.24 (0.74)	4.24 (0.65)
NRC	3.05 (0.63)	3.50 (1.00)	3.41 (0.64)	3.54 (0.76)	3.38 (0.76)
COM	3.68 (0.89)	-	3.49 (0.65)	3.74 (0.96)	3.64 (0.83)

Note. Sources from ^aJózsa & Morgan (2015); ^bAmukune et al. (2020); ^cShaoli et al. (2019); ^dÖzbey (2018a,b), Türkmen & Özbey (2018), Özbey & Aktemur Gürler (2019), Gözübüyük & Özbey (2019), Köyceğiz & Özbey (2019); ^eEach country was weighted equally for the norm mean (*M*); we used the usual formula for standard deviation (*SD*). COP = Cognitive/Object Persistence; COM = General Competence; GMP = Gross Motor Persistence; MP = Mastery Pleasure; NRC = Negative Reactions to Challenge; SPA = Social Persistence with Adults; SPC = Social Persistence with Children.

School-Age Norms for Children Developing Typically

Table 3.13 presents the preliminary norms for the DMQ 18 school-age version rated by 10-12 year-old students themselves in four countries (in five languages; *n* = 937), and Table 3.16 presents the preliminary norms for 7th to 10th grade students in Taiwan (*n* = 722). Table 3.14 shows the preliminary norms of the DMQ 18 school-age version rated by parents of 10-12 year-old students (*n* = 254) and Table 3.15 is the norms rated by teachers (*n* = 308) in two countries.

Table 3.13. Norms for DMQ 18 School-Age Version for Self-Ratings of 10-12 Year-Old Children Developing Typically

DMQ Scales	Hungary ^a (n = 140)	Taiwan ^b (n = 366)	Iran ^c (n = 114)	Russian ^d (n = 167)	Romanian ^d (n = 150)	Preliminary norm ^e (n = 937)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Instrumental scales						
COP	3.70 (0.81)	3.68 (0.81)	3.70 (0.88)	3.56 (0.89)	3.84 (0.74)	3.70 (0.83)
GMP	4.19 (0.86)	3.76 (0.87)	4.20 (0.87)	3.77 (1.16)	3.84 (1.02)	3.95 (0.96)
SPA	3.59 (0.91)	3.56 (0.76)	4.03 (0.79)	3.82 (0.96)	3.68 (0.87)	3.74 (0.86)
SPC	4.15 (0.58)	3.31 (0.77)	3.84 (0.86)	3.86 (0.92)	3.68 (0.82)	3.77 (0.79)
Expressive scales						
MP	4.25 (0.91)	4.10 (0.87)	4.58(1.19)	4.37 (0.79)	4.50 (0.55)	4.36 (0.86)
NRC	2.65 (0.96)	3.36 (0.76)	3.64 (0.90)	3.22 (0.89)	3.29 (0.79)	3.23 (0.86)
COM	3.68 (0.80)	3.23 (0.75)	3.89 (0.81)	3.48 (0.77)	3.70 (0.76)	3.60 (0.78)

Note. The Russian and Romanian-speaking children were from the Republic of Moldova. Sources from ^aJózsa (2019); ^bHuang (2019); ^cGharib et al. (2021); ^dCalchei et al. (2020); ^eEach country was weighted equally for the norm mean (*M*); we used the usual formula for standard deviation (*SD*). COP = Cognitive/Object Persistence; COM = General Competence; GMP = Gross Motor Persistence; MP = Mastery Pleasure; NRC = Negative Reactions to Challenge; SPA = Social Persistence with Adults; SPC = Social Persistence with Children.

Table 3.14. Norms for DMQ 18 School-Age Version Rated by Parents of 10-12 Year-Old Children Developing Typically

	Hungary ^a (n = 140)	Iran ^b (n = 114)	Preliminary norm ^c (n = 254)
DMQ Scales	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Instrumental scales			
COP	3.47 (0.79)	3.82 (0.72)	3.65 (0.76)
GMP	4.20 (0.79)	4.19 (0.82)	4.20 (0.81)
SPA	3.93 (0.68)	3.70 (0.75)	3.82 (0.72)
SPC	3.99 (0.58)	3.78 (0.81)	3.89 (0.70)
Expressive scales			
MP	4.44 (0.44)	4.25 (0.91)	4.35 (0.68)
NRC	3.39 (0.75)	3.08 (1.14)	3.24 (0.95)
COM	3.69 (0.66)	3.68 (0.80)	3.69 (0.73)

Note. Sources from ^aJózsa (2019); ^bGharib (2019); ^cEach country was weighted equally for the norm mean (*M*); we used the usual formula for standard deviation (*SD*). COP = Cognitive/Object Persistence; COM = General Competence; GMP = Gross Motor Persistence; MP = Mastery Pleasure; NRC = Negative Reactions to Challenge; SPA = Social Persistence with Adults; SPC = Social Persistence with Children.

Table 3.15. Norms for DMQ 18 School-Age Version of Rated by Teachers of 10-12 Year-Old Children Developing Typically

	Russian^a (n = 69)	Romanian^a (n = 88)	Hungary^b (n = 151)	Preliminary norm^c (n = 308)
DMQ Scales	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Instrumental scales				
COP	3.22 (0.87)	3.43 (1.03)	3.57 (1.04)	3.41 (0.98)
GMP	3.52 (0.87)	3.46 (1.03)	3.99 (0.85)	3.66 (0.92)
SPA	3.42 (0.93)	3.60 (0.62)	3.55 (0.81)	3.52 (0.79)
SPC	3.52 (0.91)	3.44 (0.74)	3.57 (0.68)	3.51 (0.78)
Expressive scales				
MP	3.99 (0.69)	4.06 (0.79)	4.17 (0.57)	4.07 (0.68)
NRC	3.13 (0.45)	3.46 (0.68)	2.96 (0.94)	3.18 (0.69)
COM	3.31 (0.91)	3.47 (0.93)	3.46 (1.01)	3.41 (0.95)

Note. The Russian and Romanian-speaking children were from the Republic of Moldova. Sources from ^aCalchei et al. (2020); ^bJózsa (2019); ^cEach country was weighted equally for the norm mean (*M*); we used the usual formula for standard deviation (*SD*). COP = Cognitive/Object Persistence; COM = General Competence; GMP = Gross Motor Persistence; MP = Mastery Pleasure; NRC = Negative Reactions to Challenge; SPA = Social Persistence with Adults; SPC = Social Persistence with Children.

Table 3.16. Norms for DMQ 18 School-Age Version for Self-Ratings of Grade 7th, 8th, and 10th Taiwanese Children

	Grade 7th (n = 162)	Grade 8th (n = 325)	Grade 10th (n = 235)	Preliminary norm^a (n = 722)
DMQ Scales	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Instrumental scales				
COP	3.39 (0.78)	3.16 (0.78)	3.38 (0.69)	3.31 (0.75)
GMP	3.79 (0.86)	3.45 (0.99)	3.62 (0.89)	3.62 (0.91)
SPA	3.28 (0.84)	3.16 (0.86)	3.36 (0.79)	3.27 (0.83)
SPC	3.60 (0.82)	3.48 (0.87)	3.68 (0.73)	3.59 (0.81)
Expressive scales				
MP	3.99 (0.86)	3.70 (0.96)	4.14 (0.76)	3.94 (0.86)
NRC	3.09 (0.69)	2.99 (0.75)	3.36 (0.63)	3.15 (0.69)
COM	3.18 (0.79)	3.02 (0.79)	3.31 (0.72)	3.15 (0.77)

Note. Sources from Huang & Lo (2015; 2020); ^aEach country was weighted equally for the norm mean (*M*); we used the usual formula for standard deviation (*SD*). COP = Cognitive/Object Persistence; COM = General Competence; GMP = Gross Motor Persistence; MP = Mastery Pleasure; NRC = Negative Reactions to Challenge; SPA = Social Persistence with Adults; SPC = Social Persistence with Children.

Conclusion

This chapter described DMQ 18, including the four age-related versions and the seven scales. Tables showing items that are the same and similar across different age versions were presented next. Then we discussed studies that have been conducted with DMQ 18 in various countries and described the characteristics of the children in six tables. Finally, preliminary norms were computed for preschool children developing typically and also for school-age typically developing children. We proposed these norms based on the existing data from a large samples of preschool ($n = 3,177$) and school-age children ($n = 2,221$) from 9 countries, 10 languages in 4 continents. The application of these norms in clinical or school services is described in **Chapter 7** and **Chapter 8**.

The next chapter, **Chapter 4**, summarizes the reliability data about the DMQ and includes subsections about different measures of reliability for DMQ 18.

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