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Reviews

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In the book *Assessing Mastery Motivation in Children Using the Dimensions of Mastery Questionnaire (DMQ)*, Morgan, Liao, and Józsa addressed the concept of mastery motivation, seeking clarity in the conceptual definition of challenges and strategies for applying motivation in classrooms clearly and directly. There were eight chapters in the book. In chapter one, the author summarizes current research on the concept of mastery motivation, which is most clearly demonstrated by children's instrumental behaviors, especially persistent attempts to master skills and solve problems, as well as expressive or affective behaviors, most notably enjoyment when solving problems (Barrett & Morgan, 2018; Hwang et al., 2017).

Beginning with an overview of mastery motivation and its significance for the development and competence of children, the chapter continues with a discussion of its purpose. The report concludes with a discussion of several methods for assessing mastery motivation, some of which are novel and applicable to a wide range of ages, from young children to young adults. The next chapter discusses the development of the current Dimensions of Mastery Questionnaire, particularly the DMQ 18. The second chapter of the book provides empirical and theoretical support for the revision and strengthening of the DMQ. The measurement invariance of DMQ 17 was examined for parent ratings of preschool-aged children (Hwang et al., 2017) and ratings of school-aged children (Wang et al., 2014). The purpose of these analyses of data from Hungarian, Chinese, and English speakers was to determine which items performed well in each culture. In Chapter 3, the authors discuss the development of the revised DMQ 18 and acknowledge that this version of the questionnaire is an improvement over the DMQ 17 version. During

the development of the current version of DMQ 18, the Hungarian, Chinese, and English versions were modified slightly based on input from developmental experts and a few parents in each of the three countries (US, Taiwan, and Hungary). In Chapter 4, evidence for the measurement reliability of DMQ 18 is presented, building on the evidence for DMQ 17. There are multiple methods for assessing measurement reliability, including internal consistency, test-retest, interrater, and parallel reliability. Chapter 5 discusses the evidence for the measurement validity of the revised DMQ18s, following a brief review of comparable evidence for DMQ17 (its predecessor, which contains many of the same items as DMQ18), as both instruments have been used in the published articles. The following Chapter 6 discusses cross-national and age comparisons using the DMQ, as well as data on the relationship between mastery motivation and educational achievement. The seventh chapter discusses which child and family factors have been associated with the DMQ and may therefore have a causal effect on a child's mastery motivation. Several of these factors, particularly the familial ones, may be modifiable via family-centered interventions. The eighth chapter discusses the use of the DMQ in early childhood intervention and for students with special needs. Chapter 9 concludes with a discussion of translation issues, illustrating how the International Test Commission's (ITC) recommendations for translating and adapting questionnaires can serve as a model.

The definitions and key metrics of mastery motivation were elucidated. Morgan et al. (1990) proposed that mastery motivation encourages children to attempt to master a moderately difficult skill or task. Rothenbusch et al. (2018) then discussed three distinct measurement strategies: free play, behavioral mastery motivation tasks, and the DMQ. As a result of measures promoting free play, the child is able to select an activity that they find engaging and natural. This increases the ecological validity of the situation. Short-term observations of toddlers' and preschoolers' free play revealed fewer attempts at mastery and less persistence (Rothenbusch et al., 2018). Despite the ecological validity of free play measures being the highest, observing and interpreting mastery behaviors is challenging. Thus, free play measures have been rarely used in mastery motivation research in recent years. Unquestionably, environmental, familial, and cultural factors influence the amount and type of play. For the behavioral mastery task, the evaluator utilized a problem-posing toy (a puzzle). Józsa et al. (2017) and Józsa et al. (2019) described how to evaluate pre-academic knowledge, mastery motivation, and executive functions in American Hungarian children aged 3 to 8 years. Unfortunately, the behavioral mastery task methods only permit the tester to provide the child with basic instructions and prompts. These measurements are more ecologically valid because they lack feedback. In fact, the DMQ in this book provides a detailed description of its history and evolution over the past four decades, as well as a comprehensive approach to measuring children in a variety of languages.

Beginning in the early 1980s, when the Mother's Observation of Mastery Motivation (MOMM) questionnaire was created, the DMQ questionnaire was refined annually. The primary initial form, MOMM, was designed for children ages 1 to 5. Validity was obtained in part by comparing mothers' perceptions of typical children development against at-risk children's development in order to support the excellent quality of the evaluation. The Dimensions of Mastery Questionnaire – General Scales (DMQ-G) was also designed to assess toddlers and preschoolers, with the questionnaire's language mirroring that of the mother's behavioral language. The Expanded Dimensions of Mastery Questionnaire (DMQ-E) was created in the early 1990s for both psychometric and conceptual purposes. The item was reduced to approximately five of the original 36 and reanalyzed. The results were conceptually and psychometrically stronger than the previous survey. The DMQ Expand Social (DMQ-ES) was handled in 1995 and 1996, but the DMQ 17 was finalized and modified by DMQ-ES in early 1997. These questionnaires were also translated into multiple languages (i.e., English, Hungarian, Chinese, Persian, Indonesian, Arabic, Kenyan, Bengali, Hebrew, and Moldovan). The questionnaire then referred to it as DMQ 18 Research, pertaining to both DMQ 17 and 18 in multiple countries.

Measurement invariance is crucial in various nations (i.e., Chinese, Hungarian). Thus, research was conducted with preschool samples. DMQ 17 evaluated 1,582 English-speaking, Hungarian-speaking, and Chinese-speaking preschoolers between the ages of 24 and 72 months. The authors also measure invariance among children of school age in China, Hungary, and the United States. Wang et al. (2014) examined the measurement invariance of the self-rated version of the DMQ-17 using self-ratings from U.S., Chinese, and Hungarian schoolchildren. The authors also employ Confirmatory Factor Analysis (CFA) in the development of measurements. It was discovered that the school-aged population has more cross-cultural differences than the preschool population. Unfortunately, a significant issue with DMQ 17 was that 10 to 20% of raters did not appear to accurately rate the reverse-coded items. Józsa & Barrett (2018) argued that some of the reversed persistence items on DMQ 17 may be able to measure withdrawal when challenged. Similarly, reversed items may help improve future versions of the subscale measuring shame/sadness/withdrawal in response to a challenge.

The most recent edition, DMQ 18, is presently offered in all three of the official languages (i.e., Hungarian, Chinese, and English). In addition, the other researchers have modified this questionnaire to fit the specifics of their own fields of study. Some are written in Spanish from Central America, some are written in Bahasa Indonesian, some are written in Bangla, some are written in Russian, some are written in Romanian, and others are written in Portuguese. Officially, there are four different age-related versions of the DMQ 18: infant versions for ages 6–23 months with 38 items and seven scales, preschool version for ages 2–6 years with 39 items and 7 scales, school-age by adult-rating version and school-age

by self-rating version, ages 6–18 years and 9–18 years, each with 41 items and seven scales, respectively.

Regarding the DMQ's evidence, the authors also provide support for its reliability. Cronbach's Alpha is used to measure the internal consistency reliability of the DMQ. Józsa & Molnár (2013) and Józsa et al. (2014) reported on multiple studies with large Hungarian samples of school-aged children and discovered acceptable (.67-.84, median.76) Cronbach alphas for the four persistence scales and Mastery Pleasure for children's self-ratings. In other words, test-retest reliability is also provided for DMQ 18. The reliability ranged between 0.68 and 0.97, with an average of 0.85. In this instance, the test-retest reliability of the DMQ 18 instrument scale is well-supported and acceptable. In addition, inter-rater reliability was determined to range between 0.61 and 0.88. On the other hand, the evidence supporting the DMQ 18's validity is also described. As mentioned previously, one of the developers' concerns regarding the DMQ is that it does not assess behavior during moderately challenging tasks in a clear manner, despite the fact that the moderate challenge is a crucial component of the mastery motivation construct. The authors addressed the necessity of determining whether or not DMQ 18 correlates with behavior during tasks of moderate difficulty. However, as stated previously, the scope of these tasks is narrower, so weak to moderate correlations with the DMQ are expected. In other words, the convergence validity was assessed by correlating DMQ 18 with pertinent temperamental traits and cognitive performance. Wang et al. (2019) used the Child Behavior Questionnaire to examine the relationship between the mastery motivation of typically developing US preschoolers and child temperament (CBQ). Between 0.35-0.41, the correlation ranged between four scales. The majority of studies described previously in relation to criterion validity also provided evidence of discriminant validity. As anticipated, Józsa & Barrett (2018) found a correlation between preschool Social Persistence with Children and later social skills in Grade 2 ($r = .32$), but not with math skills in Grade 2 ($r = .11$) or reading skills in Grade 2 ($r = .16$), despite the significance of these relationships. In contrast, preschool Negative Reactions to Challenge were negatively correlated with Grade 2 math and reading performance ($r = -.21$ and $-.25$, respectively). In contrast, preschool Mastery Pleasure was positively associated with Grade 2 math ($r = .17$) and reading performance ($r = .25$) (in addition to Grade 2 social skills). Rahmawati et al. (2020) conducted a formal analysis of discriminant validity by calculating the Average Variance Extracted (AVE) on five scales ranging between 0.59 and 0.79. In addition, Amukune et al. (2021) discovered good discriminant validity among the DMQ-18 scales, which ranged between .60 and .86. That is acceptable for the AVE.

Current research on mastery motivation over the past decade has included international and cross-national investigations. The primary objective of this study was to validate the DMQ mastery motivation in multiple languages and investigate potential cultural differences associated with this construct. Morgan et al. (2013) reported that

English-speaking parents rated their children higher on the DMQ 17 scale than Chinese-speaking parents, excluding negative reactions to Failure. In addition, English- and Chinese-speaking samples from each age group were compared separately (infant, preschool, and school-aged children). Moreover, the MANOVA was statistically significant for each age group. However, Józsa et al. (2014) compared the DMQ 17 self-ratings of Hungarian and Chinese eleven-year-olds. The Chinese children rated themselves higher on General Competence compared to Cognitive/Object Persistence.

Moreover, Józsa & Gharib (2019) reported differences in social and affective aspects of mastery motivation between Hungarian and Iranian children regardless of the rater. Ross & Hunter (2010) also tracked 29 participants for 3.5 years. Intriguingly, between the ages of 18 months and 3.5 years, these children demonstrated an increase in social persistence with adults, pleasure mastery, and general competence. In this issue, cross-cultural studies of mastery motivation have uncovered differences on the DMQ scales between languages, countries, and age groups.

It is widely accepted by some researchers that mastery motivation is the most important factor in predicting cognitive skill development and school achievement (Józsa & Molnár, 2013; Yarrow et al., 1975), and this is the primary reason for the study of this topic. For example, Józsa (2007) found that Hungarian teachers' ratings of their students in terms of Cognitive/Object Persistence were correlated with the development of the students' fundamental skills: 0.79 in grade 3 and 0.64 in grade 6. GPA was strongly correlated, approximately 0.80, with the combined ratings of cognitive/object persistence from both parents and students. Research has shown that students who are motivated by a desire to learn are more likely to succeed in school. It was found that grade 4 persistence was a significant predictor of grade 8 GPA, according to Józsa and Morgan (2014). Additionally, children's ability to persevere through difficult cognitive tasks is a significant predictor of their school-related skills, such as language and math achievement (e.g., Gilmore et al., 2003; Mercader et al., 2017; Mokrova et al., 2013). Gilmore et al. (2003) found that parental reports of mastery motivation predicted IQ, spelling, and reading achievement six years later, but only for girls. They found a significant correlation between maternal ratings of girls' persistence at age 2 on the DMQ and cognitive ability ($r = .61, . < .01$) and reading and spelling ($r = .64, . < .01$ & $r = .59, . < .01$, respectively). Structural Equations Modeling was used by Józsa & Barrett (2018) to examine the relationship between affective aspects of mastery motivation in preschool and second grade math and reading scores for 327 Hungarian children. Although both children's IQ ($\beta = .26, . < .01$) and SES ($\beta = .32, . < .01$) were found to be significant predictors of their math achievement in the study, only children's negative reactions to failure were identified as significant detractors. Math achievement was not predicted by Mastery Pleasure in a statistically significant way. A student's second-grade math performance was strongly correlated with

their first-grade math performance ($\beta = .80, . < .01$). The goal of this study is to examine the development of cultures in depth.

Surprisingly, the reader will find that the research on assessing and cultivating children's mastery motivation with special needs is extremely important to them in the final chapter. Numerous cross-sectional studies have found positive associations between mastery motivation and competence among pre-school and school-aged children with developmental delay (Gilmore & Cuskelly, 2009; Hauser-Cram, 1996; Niccols et al., 2003). Additionally, mastery motivation has been found to be positively associated with leisure activities in school-aged children (Warschausky et al., 2017) and adolescents with cerebral palsy (Miller et al., 2014; Shikako-Thomas et al., 2008).

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