

Mastery Motivation and Cognitive Development among Toddlers: A Developmental Perspective

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Abstract. Previous researchers have suggested that mastery motivation is a force that energizes, directs and sustains goal-directed behavior in children, and is related to their developmental outcomes, such as cognitive, language, socio-emotional, adaptive competence and physical activity. The aim of the present study was to explore the effects of mastery motivation on the cognitive development among 30 toddlers between age ranges of 18- 36 months. Mastery motivation among toddlers was measured by using Individualized assessment of mastery motivation Manual (Morgan et al, 1992) which comprised of structured play activities. As for cognitive development, Bayley Scale of Cognitive Development (Bayley-III; Bayley, 2006) was used. Simple Regression was used to determine the effect of toddlers' mastery motivation on their cognitive development. It was found that mastery motivation contributed significantly and positively towards toddlers' cognitive development (Beta=.612), receptive language scale (Beta=.599) and fine motor scale (Beta=.566). As mastery motivation targets the underlying developmental processes to enhance competence rather than merely teaching skills, it has strong contribution to early childhood intervention programs. Findings of the present research can help parents, caretakers, and child minders to plan intensive pre-school program that provide experiences to optimize child development and enhance mastery motivation.

Keywords: Mastery motivation, Cognitive development, Toddlers

1. Introduction

Mastery motivation is a psychological force that stimulates an individual to attempt independently in a focused and consistent manner, to solve problem or master a skill or task which is at least moderately challenging for him or her (Morgan, Harmon & Maslin- Cole, 1990). Developmental psychologists Piaget and White have long proposed that the basis of cognitive development is rooted in children's intrinsic curiosity and motivation to initiate behaviours that help them master their environment (In Hauser- Cram & Mercer). Motivation and cognition are conceptually different but researchers found that the two constructs are intertwined during infancy and toddlerhood. Mastery motivation has been one focus of researchers studying children cognitive development and is considered to be part of the child's self-regulatory attention system and as such, predicts later cognitive competence in young children. According to Messer, Mccarthy, Mcquiston, Macturk, Yarrow, And Vietze (1986), predictability exists between the infants' mastery behavior and their later cognitive functioning. Mastery motivation is conceptually distinct from competence as it is seen as drive for competence shown by attending to environment, attempting to acquire information about it, and persistence in goal directed activities. Mastery motivation emerge in late infancy, may be a precursor to self-determination, setting a course of increased independence, a growing sense of competence, and an enhanced perception of ability to control ones environment. As it is suggested in earlier researches that by 18 months toddlers have developed an awareness of the self as object, "the me", sense of self permanence begin to emerge and toddlers can experience success or failure at a task. The toddlers' increasing understanding of goals and outcomes contribute to the development of mastery motivation. (Brownell, 1986).

As earlier studies on mastery motivation have been based on behavioral assessment, thus in the present study mastery motivation was measured by recording toddlers' persistence on task, task competence and affect during structured play activities, however increasing number of researches are incorporating parents' and teachers' rating of children's motivated behavior. According to Morgan et al, ratings are quicker and easier to gather, and have been found to correlate significantly with behavioral assessments (Hauser- Cramp 1998). As according to previous researches that mastery motivation among toddlerhood can effect achievement motivation and cognitive development later in life, therefore, understanding its development and relationship with cognitive development over time and the factors that influence it, is important.

2. Methodology

2.1. Research Design

The present research was an exploratory study conducted by administering measures of Mastery motivation and Cognitive development to the participants of the present study.

2.2. Sample

The sample of the present study consists of 30 toddlers between the age ranges of 18-36 months, from 3 Kindergarten around the city of Kota Kinabalu Sabah, Malaysia. As for the gender of the participants, were 16 males while were 14 females.

2.3. The instruments

The instruments in the present study consist of measures of mastery motivation and cognitive development administered to the participants. Level of mastery motivation was measured by using Individualized Assessment of Mastery motivation Manual for 15-36 Month old Children developed by Morgan et al (1992). As for cognitive development, Bayley Scales of Infant Development (BSID III) developed by Nancy Bayley (2006) was used.

2.4. Individualized Assessment of Mastery motivation Manual

Individualized Assessment of Mastery motivation Manual for 15-36 Month old Children developed by Morgan et al (1992) was used to assess toddler's level of mastery motivation. Structured play activities in test- like situation were used with the objectives that (a) the tasks presented were moderately challenging to the individual child, (b) the child was able to engage in task directed behavior without interference for an extended period of time, and (c) the total amount of time child is involved in task directed behavior was recorded (Morgan et al, 1992). Play activities were structured by using three (3) types of toys i.e. Puzzles, Shape Sorters and Cause and Effect toys. Toddler's level of mastery motivation was measured on three subscales; which were persistence at tasks, task competence, and affect or mastery pleasure. Persistence at task was rated every 15 second during the 4-minute period on each toy. Mastery pleasure and positive affect displayed while achieving a solution (task competence) to moderately challenging tasks administered by examiners was also measured.

2.5. Bayley Scales of Infant Development (BSID III)

The Bayley Scales of Infant Development (BSID III) developed by Nancy Bayley (2006) was used to assess Cognitive development of Toddlers. BSID III consists of 5 subscales i.e. cognitive scale, fine motor scale, gross motor scale, receptive language scale and expressive language scale for infants and toddlers between the age range of 1 month-42 months. The measure consists of a series of developmental play tasks and takes between 45 - 60 minutes to administer. Raw scores of successfully completed items was converted to scale scores and to composite scores. The scores obtained by toddlers were used to determine their performance compared with norms taken from typically developing children.

2.6. Reliability for measures of Mastery motivation and cognitive development

The reliability of the instruments was tested by using Cronbach Alpha coefficient method. As for 5 subscales of Bayley Scale of infant development III, Cronbach Alpha for cognitive scale was found to be .89, Expressive language was .92, receptive language was found .89, fine motor scale was .90, and gross motor scale was .91. As for Individualized assessment of mastery motivation manual, for task persistence items Cronbach alpha was found to be .67, and for task competence .59. Alpha value BSID III and Individualized assessment of mastery motivation manual are displayed in the Table 1 below.

2.7. Data analysis

SPSS version 20 was used to analyze the data. Descriptive analysis was conducted to see the demographic variable such as age and gender. Simple Regression was used to determine the effect of toddlers' mastery motivation on their cognitive development.

Table 1: Alpha values for Mastery Motivation (MM) and Cognitive development measures

	No of items	Alpha value
Bayley Scales of Infant Development		
Cognitive scale	52	.89
Expressive language scale	35	.92
Receptive Language scale	37	.89
Fine motor Scale	39	.90
Gross Motor scale	31	.91
Individualized assessment of MM		
Task persistence	3	.67
Task competence	3	.59

3. Results

The analysis began by estimating frequencies/percentage for demographic variables. Simple regression was used to determine the effect and contribution of mastery motivation towards toddler's cognitive development.

3.1. Participants' demographic information

According to Table 2, with regard to their gender, 16 of the participant were males while 14 were females. As for the age of the participants, they were between the ages of 18 to 33months. Number of toddlers with the age range of 18-24 months was 12 (40%), 25-30 months was 12 (40%), and 6 (20%) of the participants were between the age range of 31- 33 months. As for their ethnic affiliation, 8 of them were Malays, 7 were Chinese, 1 was Indian, while 14 were local Sabahan.

Table 2: Demographic information of the participants (N= 30)

Variables	Frequency	Percentage
Gender		
Male	16	53.3
Female	14	46.7
Age		
18-24 months	12	40.0
19-30 months	12	40.0
31- 33 months	6	20.0
Ethnic		
Malay	8	26.7
Chinese	7	23.3
Indian	1	3.3
local Sabahan	14	46.7

3.2. Mastery motivation and cognitive development

Table 3 showed the results of Simple regression, which indicated that from three subscales of mastery motivation i.e. task persistence, task competence, and affect, only task persistence contributed significantly and positive to toddlers cognitive development scale (Beta= .612) and it can explain 42.9% of the variance in toddlers cognitive development. Task persistence was also found to be effecting toddlers receptive language scale (Beta= .599) and it can explain 45.7% variance in toddlers performance on receptive language scale. It was also found that task persistence was contributing significantly towards toddlers fine motor skills (Beta = .566) and it can explain 33.6% variance in toddlers fine motor skills. Results suggest that toddlers who persist on task for longer time period has better score on measures of cognitive development, receptive

language scale and fine motor scale. However it was also found that three subscales of mastery motivation did not contributed significantly towards expressive language scale and gross motor scale.

Table 3: Regression Analysis of Mastery Motivation (MM) As a Predictor towards Toddler's Cognitive Development

Variables	Beta	R²	F	Sig
Mastery Motivation				
Cognitive development	.612	.429	6.26	0.03
Receptive language	.599	.457	7.02	0.001
Expressive language	.470	.179	1.85	0.15
Fine motor skill	.566	.336	4.39	0.01
Gross motor skill	.470	.233	2.63	0.71

4. Discussion

Based on the fact presented above regarding the effects of toddlers' mastery motivation on their cognitive development, the goals of the present study were to examine the nature of this relationship. Cognitive development was measured on five subscales i.e. cognitive scale, receptive language scale, expressive language scale, fine motor scale and gross motor scale.

Findings of the present study suggest that toddler's persistence on task as measure of mastery motivation contributed towards their cognitive development. Toddlers who persisted on tasks for longer time period score better as well on measures of cognitive development. Current finding are supported by Ulvund (In Messer) that cognition and motivation are two closely intertwined processes, and in early human development it cannot be identified as two separate processes in operation. Redding et al (1988) also found that persistence on task was moderately correlated with mental developmental index of Bayley scale. Hauser-Cramp (1998) also suggested that measures of mastery motivation are good indicators of the ways children approach learning about objects. Infant and toddlers who appear to be more motivated may take full advantage of spontaneous learning opportunities and ultimately demonstrate more advance cognitive performance.

It was also found in the present study that measure of mastery motivation can predict toddler's fine motor skills only and not the gross motor skills. This may be due to the fact mention by Emde et al (In Messer) that there are marked individual and gender difference in motor activity and physical energy level apparent early in life that are partly attributable to genetic inheritance. Earlier studies on mastery motivation with toddlers with disabilities can be used to support findings of the present study as well. According to Smidt & Cress, (2007), toddlers with disabilities show the same strong mastery motivation as do typically developing children. Hauser-Cram (1996) also found that children ages 1-2 years with Physical impairments, did not differ in persistence, goal orientation, positive affect or competence in play from developmental peers without disabilities.

Present study also found some contribution of mastery motivation towards toddler's receptive language skills. In earlier studies, mastery motivation has also been linked to language development. Dichter-Blancher (1999), for example, studied typically developing hearing toddlers and reported that object and social mastery motivation were positively related to children's receptive, expressive, and grammatical language development. However Studies addressing mastery motivation of children with hearing loss have produced mixed results. Mac-Turk (1993) examined infants at 9 and 12 months and reported no significant difference in levels of persistence or social smiles (an indication of "task pleasure") between children with and without hearing loss. It is an open question whether the motivation to persist also facilitated linguistic competence. Children who are generally more persistent at trying to understand others and have others

understand them learn language faster, which in turn leads to greater language competency, which reinforces persistence and leads to greater communication, and so on.

Thus finding of the present study suggests that mastery motivation can contribute towards toddler's cognitive development to some extent, however it is also found that mastery motivation in a particular domain is conceptually different from a child's skill in any other domain.

5. Conclusion

The postulation of a relation between cognitive functioning and the infant's motivation to be effective, to be competent, or to master is intuitively appealing. However, only a limited number of studies have directly examined this issue. Given that the present study was aimed at predicting the contribution of mastery motivation towards cognitive development with a limited number of participants. Consequently, we should be careful before accepting the interpretation that mastery behaviour in infancy leads to later competence. Rather, the identification of these relations should stimulate further research aimed at discovering both the variables that influence the expression of mastery behaviour and its importance for development.

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