UNIVERSITY OF SZEGED

FACULTY OF HUMANITIES AND SOCIAL SCIENCES

DOCTORAL SCHOOL OF EDUCATION

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THE RELATIONSHIP OF SOME FAMILY VARIABLES WITH MASTERY MOTIVATION AND SCHOOL SUCCESS AMONG PRESCHOOL AND SCHOOL-AGE CHILDREN

Theses of PhD Dissertation

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Szeged, 2020

INTRODUCTION

Examining the impact of the environment, more specifically, the social environment is gaining momentum in child development research. More and more national and international and even longitudinal studies confirm the role of the social environment in child development, that is, its impact on certain areas of development as well as on the development of children's skills and abilities and even on their motivation. Consequently, the social environment, and most importantly, family, plays a crucial role in school success (Hamadani, Tofail, Hilaly, Engle, & Grantham-McGregor, 2010; Ribiczey, 2010). However, little is known, and there is even less empirical data, about the specific factors of the family that are most important in children's mastery motivation and school success (Busch-Rossnagel & Morgan, 2013; Józsa & D. Molnár, 2013; Józsa & Fejes, 2010; Józsa & Morgan, 2014; Morgan, Józsa, & Liao, 2017).

This paper focuses on the relationships of three areas; namely, (1) family variables, (2) mastery motivation, (3) and school success. The first three sections of the paper form the literature review. They describe the scientific methods of motivation research, present the early definitions of motivation as well as the definitions of learning motivation and mastery motivation and their methods of research. The literature review also covers the impacts of the family on children. It includes national studies to date, the connection of socialization and parent-child relationship, the early, theoretical approaches of the effects of parental behavior, as well as the empirical approach based on Parker's theoretical model, and the factors that affect child development. The relationship of family, motivation and school is reviewed: the role of parental involvement, parental styles, parental support for autonomy, socioeconomic background, family characteristics on children's motivation as well as the relationship between mastery motivation and school performance are all discussed.

The paper, then, describes an empirical research, which was performed in two groups. The relationships of parents' education, the emotional and physical home environment, mastery motivation as perceived by parents and teachers as well as that observed in challenging tasks, and the role of the emotional and physical home environment in the development of mastery motivation are examined among preschool children. While the differences and similarities of the perceived child-parent relationship by children and parents, its changes during preadolescence, and the relationships of parental education, perceived parental styles by children and parents and mastery motivation and school success are explored among elementary school children. The interrelation of parents' education, mothers' parental style as perceived by children and mothers as well as mastery motivation and school success as perceived by children and mothers is investigated.

LITERATURE REVIEW

Although the relations of motivation and school success have only been the focus of investigation in recent decades, it has evolved as one of the most dynamic areas of research, and motivation has been defined as a key factor in school success (Józsa, 2007; Réthy, 2003). Mastery motivation is the innate foundation of learning motivation, which plays a crucial role in the future development of learning motives (Józsa, 2007; Morgan et al., 2017). It may manifest in one's persistence to solve a problem or learn a skill, or it may manifest in one's joy during solving a problem (Morgan et al, 2017). Mastery motivation is "the impetus to achieve and improve one's skills in the absence of any physical reward" (Busch-Rossnagel, 1997, p. 1.). Morgan, Józsa and Liao (2017) define three main components of mastery motivation depending on which actions or behaviors are associated with persistence, which is the manifestation of mastery motivation. Persistence shown in cognitive games and school-related

tasks is called cognitive persistence. They use the term gross motor persistence for the motivation to master athletic skills and excel in sports activities; while social persistence is used for mastering social relations. They differentiate between social persistence with peers and adults. Besides these three, so-called instrumental components, they also define an expressive component, which manifests in the emotional reactions during and after mastering a skill or completing a task, or after giving up completing a task. As opposed to the instrumental component, the expressive one is not divided further into cognitive, social or motor components.

A large number of studies have drawn the attention to the fact that a lot of children's motivation declines over the school years (Józsa, Kis, & Huang, 2017; Józsa & Morgan, 2014; Józsa, Wang, Barrett, & Morgan, 2014). However, cultural differences, differences among schools and classes as well as teachers, peers and parents all play a key role in this negative tendency (Józsa & Fejes, 2010; Józsa & Morgan, 2014; Józsa et al., 2014). Thus, it is essential to reveal the role of certain parental characteristics in children's motivation. Exploring the role and interrelatedness of infant and early childhood attachment as well as the way this relationship is perceived by children in later ages is a priority area in mastery motivation research. According to Busch-Rossnagel, Knauf-Jensen and DesRosiers (1995), young children exhibit a greater degree of persistence in task mastery, and they display their pleasure during this process with greater intensity if there is a mutual positive emotional relationship between the mother and the child. Wang, Morgan, Hwang, Chen and Liao (2014) found responsiveness to children's signals or needs, and support for their social-emotional and cognitive development to play a positive role in the development of children's mastery motivation. In turn, insecure attachment results in low performance and mastery motivation (Liu, Li, & Fang, 2011; Zsolnai, 2001a, 2001b).

Family, as one of many environmental factors that influence one's motivated behaviors, plays an essential role (Józsa & Fejes, 2010). International studies that aim to reveal the connection between children's motivation and parenting typically analyze the role of one characteristic of parental behavior, namely, involvement; while achievement motivation is used to describe children's level of motivation (Gordon & Cui, 2012). Not all forms of parental involvement are positively related to motivation (Fan & Williams, 2010; Gonzalez-DeHass, Willems, & Doan Holbein, 2005). Parental support for children's autonomy, that is, when parents let children explore their environment independently, and encourage them to initiate activities, actively solve problems, make their own decisions, express their opinions freely and be self-determined, produces favorable consequences (Pomerantz, Grolnick, & Price, 2005). However, frequent use of parental control and lack of autonomy support both decrease children's motivation, and, as a result, they have a negative effect on achievement (Chew, 2016; Grolnick, 2016).

Home environment, that is, the environment in which the child grows up, is an important family variable. There is a wide range of home environment characteristics that are usually under investigation in related studies. The most common variables include family size, social status, religion, family values, access to learning equipment, parents' education, occupation and income (Muola, 2010). A cognitively stimulating home environment is, both directly and via previously measured motivation, positively associated with children's intrinsic school motivation as measured in different ages, regardless of socioeconomic status (Gottfried, Fleming, & Gottfried, 1998). A home environment of sufficient quality is related to the achievement motivation of high-achieving students. In line with the deterioration of the quality of the home environment, students' achievement motivation becomes lower, too (Bansal, Thind, & Jaswal, 2006). Studies focusing on the link between home environment and mastery motivation have rarely used the HOME inventory, which is used in this research.

Although a number of studies have confirmed the strong link between family background and school achievement, little is known about the specific processes that mediate this effect. Recent studies typically concentrate on the correlations of socioeconomic status, including parental education, and describe parents' roles through their involvement in their children's learning processes (Józsa & Fejes, 2010; Martin, Ryan, & Brooks-Gunn, 2013; Podráczky & Hegedűs, 2012). Studies related to socioeconomic status universally find that the higher the level of parental education is, the higher the achievement of the child is (Cs. Czachesz & Vidákovich, 1996; Józsa & Barrett, 2018). Studies have found a strong, positive link between parenting practices and children's success at school (Arenliu, et al., 2014; Masud, Thurasamy, & Ahmad, 2015). Furthermore, behavioral control and autonomy granting are also positively associated with children's school performance. While, on the other hand, excessive strictness and psychological control result in lower performance (Pinquart, 2015).

Mastery motivation is one of the key foundations of successful learning (Busch-Rossnagel & Morgan, 2013; Morgan et al., 2017; Razza, Martin, & Brooks-Gunn, 2015). Its role is just as important as intelligence (Józsa & Barrett, 2018; Józsa, Barrett, Józsa, Kis, & Morgan, 2017; Józsa & Morgan, 2014; Mercader, Presentación, Siegenthaler, Moliner, & Miranda, 2017). Motivation and school achievement interact with each other. Students with higher level of motivation show more intense task engagement, which they keep up for a longer period; practice more; put in greater efforts; show more persistence in learning; and these all help them improve their existing skills and acquire new ones, which in turn result in better school performance. This better performance is then reflected on motivation by further increasing it. However, lower motivation is likely to result in lower achievement, which further decreases motivation (Józsa & D. Molnár, 2013; Renaud-Dubé, Guay, Talbot, Taylor, & Koestner, 2015).

QUESTIONS AND METHODS OF THE EMPIRICAL STUDY

The logic of the studies

Three measurements were carried out among preschool children to explore the relationship of mastery motivation with parental education and the emotional and physical home environment of children. First, a small-sample pilot study was launched in which children's motivation was rated by parents and teachers. In the large-scale study, children's motivation was rated by parents on the one hand, and their emotional reactions and persistence were observed in moderately challenging tasks. A longitudinal framework was designed to explore the role of the emotional and physical home environment in the development of preschool children's mastery motivation.

In the two studies that were carried out among elementary school children, the relationships of parenting practices, children's mastery motivation and school achievement were analyzed. The study among 4th and 7th graders looked at the correlations of parental education, parenting practices, children's motivation, school achievement and a few background variables separately. A second study used structural equation modeling to explore the interrelation of mothers' parenting practices, children's mastery motivation and school achievement.

Research questions

The following research questions were addressed by the studies among preschool children:

1. Can a relationship be established between parental education and the emotional and physical home environment of preschool children?
2. Can a relationship be established between parental education and the mastery motivation of preschool children?
3. What is the nature of the relationship between the emotional and physical home environment of preschool children and their mastery motivation?
4. What is the nature of the relationship between the emotional and physical home environment of preschool children and their observed emotional reactions and persistence in moderately challenging tasks 20 months later?
5. What is the nature of the relationship between the characteristics of mastery motivation of preschool children?
6. What is the nature of the relationship between the mastery motivation of preschool children as perceived by teachers and their observed mastery motivation in moderately challenging tasks 20 months later?
7. What is the role of the explored characteristics of the home environment as well as parental education in the mastery motivation of preschool children as perceived by parents and as observed during tasks?
8. Do the home environment characteristics that have been explored in a pilot study as well as parental education and motivation as perceived by teachers have a predictive role in the two components of children's mastery motivation, that is, persistence and emotional reactions, that are observed during solving moderately challenging tasks 20 moths later?

The following research questions were addressed by the studies among elementary school children:

9. What are the differences and similarities of parenting practices as perceived by students and their parents?
10. Do students' and parents' perceptions of parenting practices change between age 10 and 13?
11. Can a relationship be established between parental education and parenting practices?
12. Can a relationship be established between parental education and the mastery motivation of elementary school children?
13. Can a relationship be established between parenting practices and the mastery motivation of elementary school children?
14. Which parenting styles as perceived by children and parents have a positive role, and which ones have a negative role in elementary students' success at school?
15. Can a relationship be established between parenting styles as perceived by students and parents and how satisfied they are with students' achievement?
16. What are the characteristics of the relations of parental education, mothers' parenting practices, mastery motivation as perceived by mothers and students and school achievement?

Methods

Sample

The sample of the pilot study consisted of the children (n=43), their parents and the teachers of a preschool. The children, their parents and the teachers from 33 groups of 17 different preschools participated in the large-scale study (n=400). The analysis of motivation in moderately challenging tasks included those children (n=232) whose motivation was both rated by parents and observed during task completion. Children, parents and the teachers from 9 groups of 4 preschools participated in the longitudinal study. The first data collection included 274 children. However, only those of them were included in the analysis who attended the preschool both during the first data collection and 20 moths later, and whose data were available for both assessments (n=77).

The sample of 4th and 7th graders consisted of 299 students and their parents. All efforts were made to proportionately represent all categories of parental education. The sample of 7th graders consisted of 296 students and their mothers. Analysis for both assessments included only those students who themselves as well as their parents both filled out their respective questionnaires.

Data collections

The pilot data collection among preschool children took place in October, 2014. Parent and teacher questionnaires were used to assess children's motivation. The emotional and physical home environment was explored with the help of the HOME Inventory. The large-scale study took place in November and December, 2014. Children's motivation was assessed by teacher questionnaires, and it was also observed in moderately challenging computer-based tasks. Children's task-oriented persistence and emotional reactions were observed during task completion. The HOME Inventory provided the information on the emotional and physical home environment of children. The first assessment of the longitudinal study took place among 4–5-year-old children in September, 2014, while the second one took place 20 months later. During the pretest, teacher questionnaires and the HOME Inventory provided the source of information. During the post-test, children's task-oriented persistence as well as their emotional reactions were observed during completing challenging computer-based tasks.

The study among 4th and 7th graders took place in February, 2011. In this study, student and parent questionnaires were used to assess parenting practices and mastery motivation; and some background questions were also asked both from students and their parents. 7th graders were assessed in February, 2016. This assessment also used student and parent questionnaires to assess parenting practices and mastery motivation; and mothers were also asked about their children's school achievement as well as about parents' level of education.

Instruments

The home environment was explored with the help of the early childhood version (3–6 years) of the HOME Inventory (Home Observation for the Measurement of the Environment) (Bradley & Caldwell, 1981). It provided a structured set of indicators to observe the spontaneous interactions between mothers and their children in their homes as well as to measure how secure, supportive and stimulating the social and physical home settings of children were. Besides the observations, structural interviews were made with mothers to

explore what games, tools and methods they use to motivate their children.

Mastery motivation was assessed with the help of the Hungarian version of DMQ 17 (Dimensions of Mastery Questionnaire) (Józsa & Morgan, 2017), Elsajátítási Motiváció Kérdőív (H-DMQ, [Mastery Motivation Questionnaire]) (Józsa & Morgan, 2014). Teachers and parents rated children with the help of its statements, while children filled out a self-report version.

Children were also observed during completing computer-based, playful tasks with various levels of difficulty (FOCUS test; Józsa, Barrett, Morgan, 2017; Józsa, Barrett, Józsa, & Morgan, 2019). Their emotional reactions were recorded by observers; they recorded the most visible emotions during task completion as well as its intensity, and rated children's persistence.

Students were asked to fill out the Hungarian version (H-PBI; Tóth & Gervai, 1999) of the Parental Bonding Instrument (PBI; Parker 1979, 1983), while parents filled out the Child-Mother Bonding Instrument (CMBI; Danis, Oates, & Gervai, 2005) to explore parenting practices. The former measures the perception of parenting styles on the dimensions of care and overprotection or control. Its items elicit for specific parental behaviors. The Child-Mother Bonding Instrument measures parents' self-perceptions.

RESULTS OF THE EMPIRICAL STUDIES

Study results among preschoolers

Results suggest a significant, positive correlation between the emotional and physical home environment characteristics that were under investigation, except for physical punishment, and both the mothers and the fathers' level of education. Results of the pilot study found a stronger correlation between the home environment and mothers' education level, while the large-scale and the longitudinal study found a stronger correlation with fathers' education level. The higher the level of education is, the more supportive home environment is created by parents.

The correlation of children's mastery motivation and parents' education level is hardly noticeable. The higher the mother's level of education is, the higher the child's cognitive persistence is as perceived by the teacher. Neither fathers' education level, nor the consolidated indicator of parents' education level show any correlation with teachers' perceptions of mastery motivation. As for parents' perceptions of mastery motives, the higher the parents' education level is, the higher they rate their kids' mastery motives. From the motives that were observed during completing challenging tasks, the large-scale study confirmed a relationship between the intensity of children's negative emotions and mothers' education level, while the longitudinal study showed a relationship with fathers' education level. The higher the level of parental education is, the higher the intensity of children's negative emotions are during completing moderately challenging tasks.

The more optimal the emotional and physical home environment is, the more typical it is of parents to encourage their children verbally and through games; and the more diverse the encouragement by parents is, the stronger mastery motives are perceived by both teachers and parents, and the more positive emotional reactions and higher level of persistence are observed in task situations.

The longitudinal study results show that encouragement through games as well as the diversity of the encouragement itself are both related to the degree of demonstration of children's emotions in task situations 20 months later as well as to the intensity of negative emotions and to the level of persistence in tasks. In addition, persistence is also related to verbal encouragement, parents' visible emotions as well as to their feeling of pride.

The higher the parent rates their child's social persistence with adults, the higher the teacher rates it, too. However, apart from this connection, parents' and teachers' perceptions are not related. As for the relationship of parents' perceptions of children's mastery motivation and their observed motivation in moderately challenging tasks, the higher the rating of cognitive persistence by parents is, the higher the degree of demonstration of positive emotions is by children, and the more persistent they are during task completion. Moreover, perceived mastery motives by teachers and parents as well as the observed ones showed a strong correlation. The higher the parent, the teacher or the observer rates a specific motive, the more likely that they rate other motives higher, too.

According to the longitudinal results, the higher the teacher rates social persistence with peers and mastery pleasure, the more visible emotions are demonstrated by children during task completion 20 months later, and the more persistent children are in challenging tasks.

The interrelation of parental education, emotional and physical home environment and children's mastery motivation was analyzed by structural equation modeling on a large sample. Results indicate that while parental education plays a role in the emotional and physical home environment, it does not have a direct connection with mastery motivation. Home environment influences both mastery motivation as perceived by parents and as observed in tasks situations. Cognitive persistence and persistence in task situations interact with each other.

Analyzing the motives observed in task situations as dependent variables, while the emotional and physical home environment as characterized by encouragement through games as well as by the diversity of encouragement, and mastery motivation as perceived by the teacher through rating cognitive persistence and mastery pleasure as independent variables, results show that teachers' perceptions of children's motivation are not predictive of children's observable emotional reactions during task completion 20 months later, however, they do predict children's persistence. The home environment is predictive of the positive emotions children demonstrate in tasks as well as of the intensity of negative emotions.

Results among school-age children

According to the results, both students and parents give higher ratings for parental care than for parental overprotection. Perceived parental overprotection and care by students correlate with each other. The higher students rate parental care, the lower they rate parental overprotection and vice versa. Parents' ratings do not suggest a relationship between parental care and parental overprotection. The perceptions of 10–13 years old students differ from their parents' with respect to parent-child relationships. The relationship between students' and parents' ratings of parental care and parental overprotection is stronger than students' ratings of the parenting or than parents' ratings of the parenting.

The indicators of parenting were closely analyzed among 10–13-year-olds. Results confirm the more prominent presence of autonomy and the decline of parental influence in adolescence. Parental are is perceived to be stronger both by parents and children at the age of 10 than at the age of 13. The degree of this decrease in parental care between age 10 and 13 is perceived to be higher by students than by their parents. However, no age difference was found in the perception of parental overprotection in grade 4 and grade 7.

Children whose parents' level of education is higher, perceive the degree of parental care to be higher. Most probably, the ceiling effect is the reason behind this lack of difference in perceived parental care by students, since the means are consistently around 90 percentage points in the groups with various levels of education. The degree of parental overprotection is perceived to be lower both by students whose parents' level of education is higher and their parents.

Just like we have seen among preschoolers, results only partly confirm a relationship between parental level of education and mastery motivation. The relationships of parental education level and children's mastery motives are different in the two age groups with regard to motives and raters as well.

The highest motives were measured when the degree of parental care was high, while that of parental overprotection was low. The motives were found to be lowest when the degree of parental care was low, and the degree of parental overprotection was high. The role of parental care in mastery motives was established by the study. Typically, it meant the perceived parenting by the rater who also rated the motives themselves. Parental overprotection did not show a correlation with motivation. No relationship was established between mastery motives and any of the dimensions of parenting.

Results show the negative impact of parental overprotection, and a positive one of parental care on grades earned as well as on the average of grades in both age groups according to students and parents. The higher the degree of parental care and the lower the degree of parental overprotection is, the higher the student achieves. However, the relationship is not reciprocal, grades children earn do not have an impact on parenting styles.

According to the results, parental overprotection is associated with all three variables relating to one's satisfaction with school success. Parental care, on the other hand, typically correlates with the satisfaction indicators of 7th graders. The degree of satisfaction with school success increases in line with the increase in the degree of parental care and the decrease in the degree of parental overprotection.

The interrelation of parental education, parenting styles, perceived motivation by students and mothers and school achievement was analyzed with structural equation modeling among 7th graders. According to the results, parental education affects students' achievement as well as all the characteristics of parenting that were under investigation. Perceived parental care by students affects the perceptions of their own motivation, while perceived parental care by mothers affects their perceptions of students' motivation. In turn, perceived mastery motivation by students and parents affects school achievement. Perceived parental overprotection by students has a direct impact on perceived motivation by mothers; moreover, it plays both a direct and an indirect role in achievement. Perceived parental overprotection by mothers affects mothers' and students' perceptions of motivation, which in turn results in higher school achievement.

Application of results

Results suggest that the mastery motivation of preschool children may be positively impacted by improving the home environment. Results may be of help to intervention programs that aim to prevent the decrease in motivation. Intervention programs usually focus on teachers. However, there is a great need for intervention programs that put their focus on parents. Leung and Shek (2014) emphasize that parents and other relatives as well may need to be taught how they can facilitate children's development of motivation. Since mastery motivation and school achievement are connected, both of them may be influenced positively through the home environment.

Both theory and practice can benefit from the study results. On the one hand, the study has added valuable new information about the factors that affect mastery motivation. Moreover, some important practical aspects have been identified; for example, the role of encouragement. The more typical encouragement through games is, and the more diverse the encouragement itself is, the higher the mastery motivation of children is. Children's mastery motives are most developed when the degree of parental care is high, while that of parental overprotection is low.

Parental overprotection has a negative, while parental care has a positive relationship with school success.

Further studies

Results suggest that some of the characteristics of the home environment that were examined with the help of the HOME Inventory, more specifically, encouragement through games, verbal encouragement and diversity of encouragement, need further investigation, since they were found to be associated with mastery motivation. Further studies are also required to revise the instrument used in this study. It may be necessary to confirm the longitudinal results on a bigger sample and with a longer time interval for follow-up. Moreover, in the future, the preschool sample should be suitable for the comparison of sexes as well as of children with favorable, unfavorable and neutral backgrounds. It may be beneficial to study younger and older children as well. It would also be worth to look at the relationship of school readiness with the characteristics of mastery motivation and the home environment.

Based on the results among school-age children, it should be considered to use only parental care in further studies, as parental overprotection, regardless of the rater, does not seem to have a direct connection with any of the motives. Further studies with a longitudinal design should also explore the interrelations of parental education, parenting styles, mastery motivation and school achievement as well as their changes over time. In the future, more age groups should be involved, and fathers' parenting styles should also be examined. Moreover, cultural and developmental differences may also be checked. Study results among school-age children should be confirmed with studies where the questionnaire is not the only instrument to assess parenting styles and children's motivation. One of the options would be to directly collect data about the parent-child relationship by observing their interactions, and to observe children during task completion, just like in the study among preschool children. In the future, standardized tests should be used to assess school achievement besides grades. Furthermore, children's emotional reactions should be further differentiated. Future studies should try to identify more personal and school factors that may decrease mastery motivation and school achievement.

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