

Emotions of Elementary School Students Supported by Their Parents in Math Tasks: An Exploratory Study

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Abstract

In this article, we explore the creation of math homework through the experiences of ten third-grade students. They shared their emotions related to the assistance received during assignments. The qualitative and exploratory research involved students selecting emotionally significant tasks for data collection. Semi-structured interviews gathered emotional information, and task functions were analyzed using theoretical frameworks. The Cognitive Structure of Emotions Theory (OCC Theory) identified emotional load, classifying results based on emotion characteristics. Findings indicate that students often express emotions tied to events, with outcomes influenced by family support, particularly from mothers and older siblings. Despite family assistance, emotions aren't solely linked to support but also to personal pride or self-reproach. Family presence during tasks acts as intrinsic motivation, fostering positive feelings. Conversely, parental absence due to time constraints emotionally impacts students negatively. The study highlights the complex interplay of emotions, family support, and academic engagement in elementary students.

Keywords: Elementary School Students, Emotions, Parents, Math Homework

Introduction

The math homework is defined as work done outside of school hours and should be assigned by subject teachers (Cooper, 2001). It is considered a means that connects teaching and learning interactions between school and home, placing the student at the center as the main actor. Parents want their child to fulfill, complete as expected, and do their best, while the teacher will grade what was requested, also expecting the student to finish as expected, in the best way, not as an author. Although this may seem simple, the completion of this activity is a source of emotional experiences for both parents and students, that is, their children.

While a prompt is discernible, the task should be regarded as an activity infused
Homework is an activity that goes hand in hand with education, from preschool to higher grades, and according to LaConte (1981), it is seen as a tradition. Warton (2001) asserts that school assignments impact the emotions of young children and create conflicts between them and their parents. Various researchers (Byron s.f., as cited in Goodall et al., 2017), (Goodall et al., 2017; Hallam, 2004; Lange & Meaney, 2011; Minke, 2017) explain that assisting children with homework should be understood as actions parents take to encourage their children to be motivated, persevere, strengthen resilience, and not give up on their tasks, rather than being a traumatic experience for parents and children.

The assignments are linked to achievement emotions (Paudel, 2013; Warton, 2001). When students are young, they express satisfaction in pleasing their parents or teachers by completing their homework; they mainly undertake these tasks in exchange for a reward (Hussein, 2023). However, as they enter puberty, students show less willingness to do homework, as they disregard the satisfaction of their teachers. Therefore, the intrinsic value of doing it contrasts between the importance or usefulness of the task and the effort it requires.

Home involvement implies that during task completion, family members provide positive reinforcement for positive behavior; otherwise, students may abandon the task, developing negative attitudes (Minke, 2017).

Elementary students typically exhibit negative attitudes towards task completion. These attitudes are related to the sense of control that students have over situations, such as when they cannot choose which activity to do first, when, or where. This negativity is also evident when tasks impose restrictions on movement, requiring students to stay still, pay attention, and not have the desired free time (Pekrun, 2006; Songsiriak & Jitpranee, 2018).

Theoretical Framework

In this process of school extension at home, it is considered that emotions play a fundamental role. As suggested by Frijda (2010), in the cognitive evaluation process itself, a common act such as speaking in a loud tone, pointing out an error, or providing assistance has multiple interpretations, reflecting emotions.

Each family provides different experiences in the completion of the same task, which consequently also implies different emotions. “Emotions add color, depth, and richness to the human experience; they can also cause spectacular disruptions in judgment and action” (Ortony et al., 1996, p.3).

In the role of parents, when one’s own view of the relationship with mathematics
is perceived as unpleasant in the presence of children, the phenomenon of emotional contagion can be experienced, defined as “Emotional contagion is a multilevel phenomenon because the precipitating stimuli arise from one individual, act upon one or more other individuals, and yield corresponding or complementary conscious awareness” (Hatfield et al., 1992, p.153). Specifically, this effect could create beliefs that hinder the development of mathematical knowledge in children. Even without experiencing the math task themselves, the infants will share emotions and form beliefs.

In various works addressing the topic, it can be identified that the majority of students do not enjoy doing homework. In contrast, the minority that finds enjoyment in this can be identified in specific studies. For instance, in the research by Songsiriak and Jitprane (2018), they assert that Chinese students enjoy their homework a lot but prefer working alone.

The assignment can be perceived by parents as a means of supporting their children’s education. It can also foster study habits, establish daily organizational routines, and reinforce the learning acquired by children in class. Teachers may view it as a tool to reinforce the lessons covered during class, providing an opportunity for parents to collaborate with their children and discuss progress in the subject. Lastly, children may primarily see it as a task that limits their engagement in more enjoyable activities.

**Learning in A Social Context: The Case of Homework**

Vygotsky argued that emotions are socially constructed components inseparable from cognition, asserting that “Thought is engendered by motivation, i.e., by our desires and needs, our interests, and emotions. Behind every thought there is an affective- volitional tendency, which holds the answer to the last ‘why’ in the analysis of thinking” (1986, p. 252, cited in Else-Quest et al., 2008, p.8).

To stop viewing homework as a tradition, it must be a necessary and useful activity, tailored to the students’ capacity and maturity level. In its implementation, teachers and parents should thoroughly explain each process and timely motivate the student. In other words, it should be clear for both the child and the parents (LaConte, 1981).

To analyze the characteristics and purposes of the assignments, three categories of tasks are presented:

a) Practical homework is considered to involve family participation; they tend to be traditional, repetitive, and boring.

b) The preparatory course is recommended for higher grades because it individualizes knowledge and is designed to address and guide new subjects.

c) The extension, which involves applying the knowledge acquired in school, is a demonstration of ownership (LaConte, 1981).
According to Hong and Milgram (2000), there are three types of tasks. The first ensures repetitive practice of acquired learning, the second provides an opportunity to enrich what has been learned and also to apply the learning, and finally, the third type involves preparing material that will be covered in subsequent lessons.

Epstein (1988) categorizes seven purposes of homework at the elementary level. The first is to practice to master the skill; participate to increase learner engagement and apply it to the context; for personal development; to establish a parent-child relationship around the importance of school and learning; as a policy to comply with school or government standards; for public relations with households to inform about learning events; and as a punishment to reinforce the teacher’s class requirements. In this categorization, Epstein emphasizes the importance of measuring outcomes. For instance, if the purpose of the homework is punishment, the outcome measure should be an improvement in behavior.

According to Hallam and Cowan (as cited in Warton, 2001), there are five purposes for assignments: to promote academic learning, develop generic skills, for school-related purposes, foster links between home and school, and enhance communication within the family.

About Emotions

According to Ortony, Clore, and Collins (1996), emotions result from a cognitive evaluation performed personally on:

a) Events, which refers to the degree of desirability or undesirability of the outcome of the event.

b) Agents, depending on the plausibility and censure of the reason behind actions. They either cause events or contribute to them.

c) Objects, which vary based on the affection and dislike for their appearance and properties.

Based on these variables, 22 emotions are defined, allowing for specification based on the triggering situation.

Method

Research Design

This work takes a qualitative approach as it focuses on the topic of math assignments. These activities, while having a specific purpose, involve a unique process for each student. Therefore, it is essential that the interpretation of each subject be gathered using instruments that are flexible and can adapt to each individual, without posing a problem in the research.

This exploratory study aims to identify the emotions that arise in children,
particularly when they are working on math assignments with the assistance of their parents.

Additionally, due to its exploratory nature, it aims to “lay the groundwork” (Hernández, 2010, p.69) for understanding emotions related to the completion of math assignments at home.

Participants

The participants were ten students from three third-grade groups in a Mexican Elementary School, consisting of four males and six females aged 7 to 8 years old.

Data Collection Tools

A semi-structured interview was designed with the purpose of having students mention a math assignment that represented a significant experience. This instrument consists of identification data and two additional sections. The first section comprises eight questions on the topic of completing a math assignment, progressing from general to specific. This approach aims to engage with the children in a more natural and fluid manner, allowing for inquiries about who helps them with the task, how they are assisted, and understanding the emotions they experienced in the process. For the second section, a photograph of the task described by the child is taken for analysis at a later time. The photograph is used to complement the interview. This approach enables the examination of the types of assignments done at home and describing findings related to the emotions experienced by the students.

The interviews were conducted at the school premises and were audio-recorded for subsequent transcription and analysis. Each interview lasted briefly, not exceeding 10 minutes per participant. It was requested that each student bring their math notebook as a tool to easily recall how the task they referred to in the interview was completed.

Subsequently, the narrative was examined, allowing the identification of triggering situations in the completion of tasks. Using the OCC Theory framework, the situation that triggered reactions with valence towards something was identified. Then, it was determined whether the reaction was towards an event, agent, or object in order to name the intensity variable that affected this reaction and to associate a resulting emotion with its respective expression.

Data Analysis

The obtained information was organized as follows. The interview transcription was arranged in a table using the transcription tool in the text processor of Microsoft Office software. Within that narrative, emphasis was placed on the segment referring to
the triggering situation expressed by each student, the assistance the student received, and the emotions described in the task development.

Furthermore, a photograph of the task referenced by the student was added. Subsequently, the task classification data according to the categories outlined by LaConte (1981) and Hong and Milgram (2000) were included, along with its purpose within the framework of Epstein (1988), which also encompasses the contribution of Hallam and Cowan as cited in Warton (2001).

**Results And Discussion**

From each interview, one emotion was extracted, resulting in the analysis of ten emotions for reference in the study. It was found that, among all participants, those who assist them with the task and were mentioned in the triggering situation are as follows: four spoke solely about their mothers, three about their siblings, one mentioned the support of both mother and sister together, one talked about an aunt, and only one referred to both parents.

Eight emotions were related to events, and two were related to agents. The events included assistance, correction, and companionship provided by mothers, companionship and assistance from siblings, assistance from an aunt, and the lack of assistance from parents.

Through discourse analysis, reactions to events revealed five well-being emotions: four expressions of joy (pleasure in response to a desirable event) and one of sorrow (displeasure in response to an undesirable event). Additionally, three achievement emotions were found: two expressions of relief (pleasure in the refutation of the anticipation of an undesirable event) and one of fear (displeasure in the anticipation of an undesirable event).

For reactions to agents, which included the assistance of mothers and the processes explained by a sibling for task completion, one emotion corresponds to pride (approval of a plausible action of oneself), and the other emotion is self-reproach (disapproval of a condemnable action of oneself).
Table 1: Compilation of interview responses

<table>
<thead>
<tr>
<th>REACTION TO EVENT</th>
<th>TYPE OF EMOTION</th>
<th>EMOTION</th>
<th>EXPRESSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The student's mom provides assistance with homework</td>
<td>Emotions of well-being</td>
<td>Jubilation</td>
<td>Joyful</td>
</tr>
<tr>
<td>2. The student does homework in the company of their siblings</td>
<td>Emotions of well-being</td>
<td>Jubilation</td>
<td>Feeling good</td>
</tr>
<tr>
<td>3. The student had the company and assistance of his mom and sister while doing the task</td>
<td>Emotions of well-being</td>
<td>Jubilation</td>
<td>Feeling good</td>
</tr>
<tr>
<td>4. The student received the company and assistance of his mom to complete the task</td>
<td>Emotions of well-being</td>
<td>Jubilation</td>
<td>Happy</td>
</tr>
<tr>
<td>5. The student didn't have parental assistance with the homework</td>
<td>Emotions of well-being</td>
<td>Distress</td>
<td>Longing</td>
</tr>
<tr>
<td>6. The student had no errors in the questions posed by his aunt regarding the assignment</td>
<td>Effort, accomplishment</td>
<td>Emotions of relief</td>
<td>Relief</td>
</tr>
<tr>
<td>7. The student corrected his assignment with the help of his mom</td>
<td>Effort, accomplishment</td>
<td>Emotions of relief</td>
<td>Relief</td>
</tr>
<tr>
<td>8. The student didn’t know if he was going to answer his sister’s questions about multiplication tables correctly</td>
<td>Effort, accomplishment</td>
<td>Fear emotions</td>
<td>Nervous</td>
</tr>
<tr>
<td>9. The assistance the student received from his mom facilitated the student's understanding and enjoyment of the task</td>
<td>Pride</td>
<td>Emotions of pride</td>
<td>Pride</td>
</tr>
<tr>
<td>10. The assistance the student received from his brother was not sufficient for the student to understand the task processes</td>
<td>Reproach</td>
<td>Emotions of self-reproach</td>
<td>Shame</td>
</tr>
</tbody>
</table>

Source: Own elaboration
**Event 1**

The task mentioned by the student was a practice exercise aimed at improving skills. In this assignment, the student had to solve 12 three-digit addition problems. To vocalize the counting, his mom used her fingers, thereby monitoring whether the answer was correct or incorrect. She immediately informed her son whether he was right or wrong. The result of this action was beneficial for the student because it had an impact on his understanding of addition. In other words, not only did the son count his mom’s fingers, but he also practiced this procedure with tools that allowed him to experience what that algorithm expresses, coupled with a pleasant mother-son interaction.

The student expressed:

“I felt that I started to really like addition; it makes a bit of sense when we do it” (Student 1, personal communication, October 20, 2023).

With this statement, it is observed that the student transitioned from seeing a depicted scheme or a structure with numbers to the idea that what is depicted is a representation, and they understand its meaning. It is a shift in self-perception, placing the emotion within the category of well-being emotions.

In this case, it was found that the student successfully completed the task with joy, defined as “a feeling of satisfaction in possession” (Real Academia Española [RAE], s.f.). In this context, the possession of understanding the task.

**Event 2**

The student’s assignment consists of practice exercises involving addition (to enhance the skill) and comparing the results using greater than (>) and less than (<) signs, with the political aim of reviewing the topic covered in class. The assistance provided by their tutor involves checking that the assignment is completed, without reviewing the content or providing feedback. Despite this, the student describes feeling good about not doing the assignment alone, understanding that their mom has household duties, and time doesn’t allow her to help during the preparation.

The student talked about the company of their siblings in the place where they worked on their assignment and being in their company made them feel good.

“...I felt happy, content, but it’s because I was with my brothers” (Student 2, personal communication, October 20, 2023).

During the interview, the student expressed feeling very comfortable with mathematics (feeling good corresponds to the emotions of well-being), despite not receiving scaffolding during the assignment. However, from the narrative, we find that the student’s dad has helped in attitudinal aspects.

The student refers to mathematics as an easy subject and boasted that their dad was very good at math when he was in school. They emphasized that it was their father
who taught them how to use the abacus to make the task simpler. In this situation, we encounter the “emotional contagion effect” (Hatfield et al., 1992).

**Event 3**

The task mentioned in this case corresponds to the classification of repetitive exercise and practice for skill development. It involves 15 multiplications where one factor has two digits, and the other factor has one.

The support the student receives during the task involves his mom overseeing the process. If there is any error in the counting, she points it out and assists in the correct counting using her fingers. The student couldn’t finish the task with his mom, so his sister had to intervene, and they continued with the same working method.

The student mentioned feeling good and considered the support of his mom and sister important during the task, allowing him to feel good and complete his assignment normally. For this reason, it is considered that the student requires company and guidance to feel secure.

“I felt as usual, neither sad nor happy. I was normal” (Student 3, personal communication, October 20, 2023).

The above description refers to feeling good, which corresponds to the emotions of well-being within the OCC Theory. It was classified as a joy emotion because it is understood as being pleased by a desirable event (the company of his mom and sister to feel secure). Despite the student’s expression, the term “joy” could be questioned. However, its classification is justified because the variable related to the degree of desirability of the event is expressed at a low intensity. This could be because the student knows that the support of his family exists, either from his mom or his sister.

**Event 4**

The referenced task involves representing 18 fractions with rectangles. Due to its characteristics, it is a practice assignment aimed at reinforcing what has been learned and encouraging those involved in its completion to apply their learning to other situations. It also aligns with the policy of revisiting the class topic through homework.

The goal is for students to represent and compare the drawings to identify equalities and representations. For instance, understanding that 1/2 is greater than 1/8 even when the numbers used are larger.

The assistance the student received from his mother included explanations to help him with the representations. During this task, the student stated feeling happy.

“Well, happy. Because my mom was with me” (Student 4, personal communication, October 20, 2023).

Once again, we find that, although this task is a bit more elaborate with varied
purposes compared to the previously mentioned assignments, the triggering situation for the emotion revolves around the company the child receives. The student expresses feeling happy, and the identified emotion for this expression is jubilation: he is content about a desirable event, the company of his mom. Once again, an emotion of well-being.

**Event 5**

In this case, we are discussing the same task described in Event 4. The assistance provided by the student’s mom involved checking that the task was completed without providing feedback; therefore, the student worked on the task alone.

Within the task, it was evident that the student understood the required instructions; however, his work revealed insecurity as his representations were very small. Although correct, it seemed he didn’t want it to be apparent whether they were correct or not.

“...sometimes I do the homework by myself, and I’m getting used to not getting help” (Student 5, personal communication, October 20, 2023).

In this situation, an undesirable event is associated with well-being emotions, contrary to the narratives of previous cases. This emotion is distress, characterized in the OCC theory as being displeased by an undesirable event.

The expression identified is yearning, understood as “remembering with sorrow the absence, deprivation, or loss of someone or something very dear” (RAE, n. d.). In this description, it is evident that the student recalls the help his parents used to provide.

**Event 6**

This concerns a task for practicing a repetitive exercise where the aim was to understand the commutative property of multiplication. The multiplication was represented in writing, accompanied by a drawing of a rectangle that represented the units of the result.

Assistance in the elaboration was provided by the student’s aunt. She asked the student questions about multiplications and told him whether the result was correct or incorrect. When the result was incorrect, the child was only asked to try again.

In the child’s narrative about the emotions during the task, the following was found.

“I felt happy because I almost got all the multiplications right” (Student 6, personal communication, October 20, 2023).

This is an emotion based on anticipation according to the OCC Theory. The emotion identified is relief because the student is pleased with the refutation of the anticipation of an undesirable event, such as making continuous mistakes in the answers given to his aunt.
Event 7

The task in this case consists of 16 three-digit subtractions in both the minuend and subtrahend. It’s a repetitive practice exercise. The assistance was provided by the child’s mom, involving reviewing the completed task to provide feedback on errors. There is no assistance during the actual elaboration.

In this narrative, the student refers to the action taken after submitting his task to the teacher. The mom reviewed the student’s notebook and noticed that the previously submitted task had errors, so they proceeded to correct it. In this situation, the student felt nervous about his mom’s reaction.

“...my mom told me what was wrong, then I felt calm because she already knew I had made mistakes in some subtractions and not in others” (Student 7, personal communication, October 20, 2023).

An emotion of relief is expressed, related to his effort and the completion of the work.

Event 8

The task described by the student involves reviewing multiplication tables. The teacher’s instructions were to review the tables for the numbers one, two, and three, but the student went up to the table of six, considering that he had mastered the knowledge of the initial multiplication tables.

The older sister, a high school student, provided assistance with this task. The support involved repeating together while looking at the multiplication tables noted in the notebook. Later, both repeated the multiplication tables verbally without visual aid. After sufficient review, the student’s sister asked random multiplications to check the mastery of the multiplication tables. The student expressed feeling nervous.

“I felt nervous because I didn’t know if I was going to answer correctly or incorrectly. I didn’t know if I was going to make a mistake, if I was going to say something else” (Student 8, personal communication, October 20, 2023).

This expression corresponds to the emotion of fear. The student was uneasy about the anticipation of an undesirable event, the fear of making a mistake or giving an incorrect answer that would show a lack of mastery of the multiplication tables.

“...nothing bad was going to happen, but I was going to make a mistake, and they were going to deduct points” (Student 8, personal communication, October 20, 2023).

The reaction is classified within the emotions of effort and achievement, where the reason for the fear is evident among its variables. The extent to which the event is undesirable is linked to the threat that the teacher could deduct points from the grade, determining the effort put into the subject. Hence, the student avoids this by studying
Agent 1

Student 9’s task involved visualizing the increase in numbers in the multiplication tables. It is an activity designed to practice the learned skill and enhance understanding. The problem presented involves a worker arranging balls in rectangular boxes, which are divided into equally sized square spaces. The boxes have spaces occupied by balls and empty spaces where students will need to draw balls as the worker fills them.

The first box is two spaces wide and six spaces long. Initially, there are four spaces occupied by balls, represented by the multiplication $2 \times 2 = 4$. Subsequently, the student must place the remaining balls one by one and represent the progress of filling the box through multiplication. This box refers to the multiplication table of the number two, and there are also two more boxes with characteristics to refer to the tables of the numbers three and four.

The task is observed to be graded, and although, in the case of the box with two spaces in width, the student proposed solutions ranging from the representation of $2 \times 1 = 2$ to $2 \times 6 = 12$, the teacher scored it an 8 on a scale of 5 to 10 possible points. The reason is that the problem did not convey that the student should reflect that result, as the beginning was taken with the multiplication $2 \times 2 = 4$. In this task, the teacher was consistent between what was assigned and what was graded. The teacher fulfilled Epstein’s (1988) emphasis on the purposes of the task: to measure the results. The assistance the student received during the task was provided by his mom. At the start of the task, the mom interpreted the problem and indicated to the child which multiplications he needed to solve. The child then solved them and drew the corresponding balls in the spaces.

It is described that the student performs a mechanical task, with Mom interpreting. Gradually, the student understood the procedure for completing this task; the reason behind the multiplications dictated by his mom. Eventually, he was able to enjoy himself after discovering the meaning behind the procedures. Within the student’s narrative, pride was expressed as follows.

“At first, I felt a bit bored because I like homework, but not too much. Then, I felt joy because I started to understand it, and I began to have fun” (Student 9, personal communication, October 20, 2023).

Boredom and apathy arise from two possible situations: an easy task or a task that is out of reach, and this can hinder engagement with tasks (Else-Quest, et al., 2018).

In the OCC theory, the emotion of pride is the approval of a plausible action by oneself. The student expressed discouragement at the idea that there was too much
homework; therefore, it would be implausible to complete it. The cognitive unit explains that the student did not feel motivated to do the homework, so he needed his mom’s support to make it possible to finish the activity. The assistance from his mom facilitated his work.

Agent 2

In this task, we have a couple of subtractions, each with three digits in the minuend and subtrahend. It is a practice exercise to enhance skills. The assistance was provided by the student’s brother and was narrated by the student as follows.

“…explaining to me how the task was going, before I used to get them wrong, but now that my brother explained, I know how they are. I know how they are because before I didn’t understand subtractions (...) I felt something, it’s like I didn’t understand and couldn’t figure it out well (...) it’s strange because, well, I don’t really like subtractions. I felt relief because he had already explained to me (...) I didn’t understand well, it’s just that I don’t like subtractions, but he had already explained to me” (Student 10, personal communication, October 20, 2023).

Additionally, in this passage, it was identified that the student experienced disapproval of a reprehensible action of himself, that is, the emotion of self-reproach.

Conclusion

The analysis of the work aligns with LaConte’s definition (1981), where he expresses that tasks are seen as a tradition. Upon reviewing the tasks studied, it was observed that tasks serving more than one purpose, in addition to practice, were less common.

In the interviews, it was not found that the students discussed the objectives of the tasks. Rarely do teachers explain to students the purposes or goals of the activities (Songsiriak, 2018).

Achievement-related emotions were found to be associated with the task, as asserted by Paudel (2013) and Warton (2001). In half of the cases, students expressed relief, nervousness, pride, and embarrassment. The aforementioned emotions align with “achievement emotions” (Pekrun, 2019, p.143).

It was observed and confirmed that parental assistance provides students with confidence to complete their assignments successfully. This aligns with the assertion by Byron (n. d.), as cited in other studies (Goodall et al., 2017; Hallam, 2004; Lange & Meaney, 2011; Minke, 2017), stating that parental support should involve actions that encourage their children to persist in their tasks. Family involvement in task completion was mentioned as a primary motivator for students.

The statement by Minke (2017) is also corroborated, emphasizing the
significance of the student’s environment, as it influences both the capability and the desire to complete a task.

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