

Relationship of Parental Stress Levels and Selected Child Cognitive Processes of Grade Two Students

Josben Romuald B. Pablo

Marison R. Dy¹⁾

College of Human Ecology
UP Los Banos, Laguna, Philippines

Abstract

Parents experience various stressors as they perform their roles in the family and these may influence child development. The study aimed to determine the relationship of parenting stress levels on selected cognitive processes of Grade Two students in public and private schools. Parent-respondents accomplished a questionnaire to gather socio-demographic data and parental stress levels while three psychometric tests were used to assess visual immediate memory, learning, and working memory of the Grade Two students. Descriptive and inferential statistics were used for data analysis. Findings show that 62% of the parents had low parental stress levels. More than half of the students had high scores for visual immediate memory, more than three-fourths were in the high range for learning, and more than half was in the low range for working memory. Educational attainment, career, household income, income source, and primary caregiver role had significant relationships to parental stress levels. Parental stress levels did not significantly affect the cognitive processes and the relationships were generally negative. Parents should continuously practice effective stress management and coping responses to prevent stress spillover to their children.

Keywords: parenting stress, cognitive processes, learning, visual immediate memory, working memory

Corresponding author, ¹⁾ mrDY@up.edu.ph

Introduction

Parents experience certain stress coming from various stimuli as they tackle their family lives. The stress experienced by parents or “parenting stress” is the adverse reactions of the parents caused by the stimuli of the demands of being one (Deater-Deckard, 1998). This stress is not only distinct by the mere experiences of being parents but also through their behavioral, emotional, cognitive, biological, and other external responses to their situation (Cronin, Becher, Christians, Maher, & Dibb, 2015). Some demands that induce parenting stress are feeding, cleaning, washing clothes, child care, child illnesses, doing schoolwork, and attending school events (Stephens, 2007). Due to parental demands, there are occupational hazards like “fatigue, nagging self-doubt, short tempers, and mental-exhaustion or parent burnout” (Stephens, 2007, p. 1). Aside from the various parenting demands which induce stress, the greater environment may also be sources of parent stress. These include social and environmental concerns, other family responsibilities, and the daily challenges life brings (Cronin et al., 2015).

Parenting stress is a key variable of the study because it can influence parental behavior, emotions, and thought as the parent fulfills his/her parenting role. Previous research has shown that negative parental thoughts and behaviors may spillover into parent-child interactions and, thus, can affect child development over time (Corona, Lefkowitz, Sigman, & Romo, 2005; Gutman et al., as cited in Coon, 2007). Corona et al. (2005) pointed out that parenting stress influences discipline strategies and harsh discipline which may arise may have adverse effects on children. High parental stress levels may result to difficult child temperament, behavior problems, low cognitive readiness level for parenting, low parental self-efficacy, and less knowledge of child development (Wakschlag, Chase-Lansdale, & Brooks-Gunn, as cited in Coon, 2007).

In particular, parental stressors are significant to child development and well-being because they can be determinants in the child’s cognitive abilities (Conger et al., 1992). Coon (2007) reported that high parenting stress may lead to cognitive development disorders in childhood. Code (as cited in Pellisier, 2016) pointed out that parental stress can affect child cognition because it is contagious. Specifically, a few studies have shown that parenting stress is associated with attention problems, low school readiness, decreased

academic achievement, and low cognitive ability levels in early and middle childhood (Jackson et al., as cited in Coon, 2007; Morales & Guerra, as cited in Cronin et al., 2015; National Scientific Council on the Developing Child, 2010; Nievar & Luster, 2006). These outcomes may arise due to a lack of positive parent-child interactions, reduced caregiving capacities (National Scientific Council on the Developing Child, 2010), and parenting styles which are inconsistent and unsupportive (Jackson et al., as cited in Coon, 2007). These parenting practices are manifested by insensitive behaviors, detachment or passivity, less manifestations of physical affection, low support, and low cognitive stimulation for the child.

These decreased cognitive abilities emerge due to a weakened brain development in childhood (Code, as cited in Pellisier, 2016; National Scientific Council on the Developing Child, 2014). Child stress gives rise to elevated cortisol levels and, over time, may change the brain regions essential to emotional control, problem-solving, learning, attention, and memory (Shonkoff & Levitt, 2010). Collectively, these mental abilities are known as the executive functions and are important for academic success (National Institutes of Mental Health, 2012).

Human cognitive abilities rely on the individual's capacity to retrieve information in memory (Meadows, 2002). For all stimuli, problems, or experiences people face, one of the most common things done is to compare a new situation with a previous situation. Memory is affected by language skills, knowledge, judgements, and social and cultural influences (Meadows, 2002). Thus, memory development is important to the child as a learner. The types of memory considered in this study are Visual Immediate Memory (VIM), Learning (LE), and Working Memory (WM). VIM is the storage of visual information in a temporary buffer (Luria, Sessa, Gotler, Jolicoeur, & Dell'Acqua, 2009). LE is the lasting change in behavior as a result of experience and practice. Lastly, WM is a system in the mind that gives out temporary storage and manipulation of certain information for complex cognitive activities (Baddeley, 1992).

Only a few studies have investigated the relationship between parenting stress and children's cognitive abilities, in particular, memory. Tachibana et al. (2012) looked into parenting stress and working memory in early childhood. The link between these variables warrant attention since both parenting stress and children's cognitive abilities are

significant elements which influence child development. This study aims to contribute more knowledge to this research gap. With adequate knowledge on the effects of their stressors on their child, parents might become cautious of the negative effects that will impose on the child's cognition. Children in middle childhood were focused on because the executive functions develop throughout the childhood years (Tachibana et al., 2012). Enhancing these executive functions is an important factor for healthy child development and learning. This study would contribute to the limited researches in the country regarding parenting stress and its impact on the memory abilities of the school-aged child.

The following are the research questions:

1. What are the parental stress levels of the parent-respondents?
2. What are the children's cognitive levels in terms of their visual immediate memory, learning, and working memory?
3. What is the relationship between the sociodemographic characteristics and parental stress levels?
4. What is the relationship between the parental stress levels and the selected memory abilities?

Methodology

This is a quantitative and cross-sectional study gathering data from parents and children at only one point in time. It is also a descriptive study utilizing the central measures of tendencies to describe the data gathered from the parents on their stress level and from the children's scores in the psychometric tests.

The sample was the Grade Two students of a public and private elementary school in Los Banos, Laguna, Philippines. It is a rural area and an academic community with numerous schools and colleges located in the town. There were 332 students from the public school while there were 50 students from the private school. Included in the sample were the parents of the students to gather necessary data on parental stress levels. Informed consent was obtained from the parents prior to data collection.

Multi-stage sampling was conducted wherein cluster sampling and simple random

sampling were employed. Two sections each from the public and private schools were chosen using cluster sampling. From 84 students of two sections of the public school, 70 was the determined sample with a confidence level of 95%. From 50 students of two sections of the private school, 45 was the determined sample with a confidence level of 95%. The rosters of enrolled students were gathered from the schools. The students were assigned specific numbers and simple random sampling was done using these numbers to determine the participants. Thus, a total of 115 students were selected together with their respective parents. Data gathered from the students were complete. The response rate for the parents was 87%.

A questionnaire was used to gather data. The first part gathered sociodemographic data (age, sex, household headship, civil status, educational attainment, career, career satisfaction level, household income, income source, number of children, primary caregiver, and hours of family bonding). The second part, the Parental Stress Scale (Berry & Jones, 1995), is an 18-item test which measures stress levels experienced by parents in dimensions such as role performance and attachment. The Cronbach's alpha is 0.83. Respondents will agree with each statement on a 5-point Likert scale. The possible score range is 18-90 with higher scores indicating higher parental stress.

The third part, the Children's Memory Scale (Cohen, as cited in Cash, 2007), included the Dots Location and Faces subtests. LE was measured by Dots Location which included 6 identical blue dots inside a rectangular grid. The child was told to remember the location of the dots. After 5 seconds, the pattern would be placed inside a 3 by 4 grid. No constraints were placed and no feedback was given. The dots were removed and the children were asked to replicate the same pattern. The same process was replicated for the last time and for a total of three learning trials. Afterwards, the child had shown a new pattern of identical red dots and was asked to remember the pattern and to reproduce it in the 3 by 4 grid. This was the distraction trial. Finally, in the delayed recall trial, the pattern of blue dots was then asked to be placed on the grid. Only the correct locations of the blue dots were scored. Four trials of blue dots had a total score of 24.

VIM was measured by the Faces test (Cash, 2007). It involved 12 unfamiliar faces without the person's hair and clothing in the photo. No persons with glasses or facial hair were shown. Each face was shown to the child for approximately 2 seconds. The child was

asked to look closely at each face and to remember the photo because they will be later asked whether the pictures shown to him/her were the ones that they were asked to remember. Afterwards, a series of 36 photos were shown. The child was told to say “yes” if the photo was shown before or “no” if the photo was not. During the test, 18 new photos were added to the series and 6 of the 12 “study faces” were shown twice, having 18 “study faces.” One point was rewarded for every correct answer. The highest possible score is 36.

The Wechsler Intelligence Scale for Children-Revised or WISC-R (Wechsler, 1974) was formulated to measure universal intelligence and multi-determined and multifaceted traits of a child such as personality traits, motivation, attitudes, and values. In this study, the Digit Span subset, composing of the Digits Forward and Digits Backward, was used to measure WM (Jepsen, 2008). The former was done by repeating the numbers dictated in the same order. Seven sequences were created with random numbers from 0-10; this was allotted with one trial only and scored one point per trial. These seven sequences were used for all students to have a sense of uniformity. Digits Backward was done by stating the numbers dictated in a backward manner. The maximum score for the subtest was 14.

These subtests were pretested to a group of Grade 2 students to check for the children’s understanding of the instructions and if the demands of the tasks could be met. Refinements were done based on the pretest. Students were tested within school premises on dates pre-determined by their respective advisers. The Faces and Dots Location subtests were administered first. The following day, the Digits Span subtests were executed. The students were given the questionnaire for their parents so that the accomplished questionnaires could be gathered in the following day. When the parents of the children were in the school premises, they answered the questionnaire there.

Data gathered from the PSS and the three memory tests were analyzed through descriptive statistics. Correlation was utilized for the nominal variables’ association with parental stress level. Spearman and Pearson correlations were done for the ordinal and scalar variables, respectively, to correlate the other variables to the parental stress level. Simple linear regression was done with the PSS scores and the three psychometric test scores. This was to determine the causality of the parental stress levels to the child memory abilities. Three assumptions ($p < 0.1$, $p < 0.05$, $p < 0.01$) were identified for analyzing the regression models.

Results and Discussion

Socio-Demographic Characteristics of the Parent-Respondents

Table 1 shows that the average age of the parents was 37 years old ($SD = 7.75$) with nearly a third in the 24-30 age group. More mothers answered the questionnaire (62%), but the fathers were the household head of majority of the families (85%). Nearly, three-fourths were married (71%) and 28% have college degrees. Almost half of the respondents (49%) stated that they were working in the third economic sector, rendering services such as retail, health, and education. More than a third of the parents were satisfied (38%) with their careers. Their monthly income was in the 0-10,000 range (41%) with salary as their primary source (75%). Half of the parents had only 1-2 children (51%) and the mothers were the primary caregivers (75%). Parents spend time with their child for 0-6 hours (48%) per day.

Table 1. *Sociodemographic Characteristics of the Parent Respondents (n=100)*

Characteristics		Frequency	Percentage
<i>Age</i>	24-30	29	29
	31-37	27	27
	38-44	25	25
	45-51	17	17
	51-58	2	2
<i>Sex</i>	Male	38	38
	Female	62	62
<i>Household Head</i>	Mother	12	12
	Father	83	83
	Other Relatives	4	4
<i>Civil Status</i>	Single	11	11
	Live-in	11	11
	Married	71	71
	Separated	5	5
	Widowed	2	2

<i>Educational Attainment</i>	Elementary	4	4
	High School	11	11
	HS Graduate	12	12
	Vocational	9	9
	College	24	24
	College Graduate	28	28
	Post Graduate	12	12
<i>Career</i>	Unemployed	32	32
	First Sector	7	7
	Second Sector	12	12
	Third Sector	49	49
<i>Career Satisf'n Level</i>	Very Satisfactory	19	19
	Satisfactory	38	38
	Average	27	27
	Unsatisfactory	12	12
	Very Unsatisfactory	4	4
<i>Household Income</i>	0-10,000	41	41
	10,000-30,000	38	38
	30,000-60,000	14	14
	90,000 & above	3	3
<i>Income Source</i>	Salary	75	75
	Business	15	15
	From others/relatives	8	8
	Loans	2	2
<i>Number of Children</i>	1-2	51	51
	3-4	39	39
	5-6	7	7
	7-8	3	3
<i>Primary Caregiver</i>	Mother	75	75
	Father	10	10
	Other children	3	3
	Yaya/nanny	4	4
	Other relatives	8	8
<i>Hrs of Bonding/Day</i>	0-6	48	48
	7-12	36	36
	13-18	4	4
	19-24	12	0

Parental Stress Levels

The average parental stress level was 40 ($SD = 8.56$). Nearly two-thirds (62%) of the parents had low parental stress levels (see Table 2). Resilience is a factor that could have a strong influence towards the parental stress levels. It was observed that even though some families reside in stressful environments, they are able to cope with stress. A high internal locus of control might also influence the parents in how they live their lives despite stressful conditions. Social support coming from their families and communities might also affect how they are able to cope with stress (Rouse, 1998). Furthermore, Lugtu (2013) cited that the Filipinos are one of the happiest citizens in the world, stating the family as the main reason for the Filipino's happiness. Despite problems and conflicts, the family is considered as the most enduring relationship and the motivation for many to live. Aside from the family, good health and a deep faith are also reasons for the Filipinos' happiness.

Table 2. *Parental Stress Levels (n=100)*

Parental Stress Levels	Frequency	Percent
Low (18-42)	62	62.0
Average (43-66)	38	38.0
High (67-90)	0	0.0
Total	100	100.0

Child Memory Abilities

Table 3 shows the psychometric scores of the children. The average performance of the students in VIM was 24.5 ($SD = 4.68$); for LE, it was 20.1 ($SD = 4.75$); and for WM, it was 4.37 ($SD = 1.93$).

All scores were further classified into low, average, and high scores. For VIM, more than half (55%) of the respondents had high scores; for LE, more than three-fourths were in the high range (78%); and for WM, more than half (59%) were in the low range.

Table 3. *Children's Performance in the Psychometric Tests (n=115)*

Cognitive Ability	Frequency	Percent
<i>Visual Immediate Memory</i>		
Low (0-12)	1	1
Average (13-24)	44	44.0
High (25-36)	55	55.0
Total	100	100.0
<i>Learning</i>		
Low (0-8)	1	1
Average (9-16)	21	21.0
High (17-24)	78	78.0
Total	100	100.0
<i>Working Memory</i>		
Low (0-4)	59	59
Average (5-9)	39	39
High (10-14)	2	2
Total	100	100

Associations between Sociodemographic Characteristics and Parental Stress Levels

Table 4 shows that parental age was weakly positively correlated with parental stress levels ($r = 0.142$). As parental age increased, parental stress levels slightly increased. Aldwin, Sutton, Chiara, and Spiro (1996) reiterated that older individuals may experience disability or illness, the loss of friends and family members, and job changes. Clarke and Korotchenko (2011) stated that among older individuals, the experiences of illness and fatigue are attached to the wear-and-tear of their aging bodies. Thus, adulthood may impose greater amounts of parental stress levels (Rodin, as cited in Aldwin et al., 1996). Furthermore, since majority of the parents who responded were mothers, McLean et al. (2016) stated that the older the maternal age, the more there were symptoms of distress.

Parent's sex was very weakly positively correlated with parental stress levels ($r = 0.151$). Fathers had a very weak positive correlation whereas females had a weak negative correlation to parental stress levels. Shuntermann (as cited in Soltanifar et al., 2015) explained that there are differences in the amounts of stress that fathers and mothers

experience. Fathers may struggle to determine how they will distribute their time and resources among family members especially if they are the main providers (Soltanifar et al., 2015; Tach, 2012).

Being a household head strongly positively correlated with parental stress levels ($r = 0.729$). Majority of the household heads were the fathers. The Philippines, which remains patriarchal, has certain expectations of males as providers, protectors, and/or disciplinarians which may inflict certain amounts of parental stress. Stephens (2007) suggested that heavy family responsibilities and expectations could press down on the parent and, thus, lead to parental burn-out. They could suffer from role overload which exists when the expectations are greater than the person's capacity and motivation to perform the role (Conley & Woosley, as cited in Idris, 2011).

Table 4. *Associations between Sociodemographic Characteristics and Parental Stress Levels (n=100)*

Parental Stressors	Correlation r	Parental Stress Level
Age	Pearson's	.142
Sex	Pearson's	.151
Household Head	Pearson's	.729
Civil Status	Pearson's	.134
Educational Attainment	Spearman's	0.0002**
Career	Pearson's	0.0017**
Career Satisfaction Level	Spearman's	.081
Household Income	Spearman's	-0.281**
Income Source	Pearson's	0.21*
Number of Children	Pearson's	.377
Primary Caregiver	Pearson's	0.0098**
Hours of Family Bonding	Pearson's	.383

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Civil status very weakly positively correlated with parental stress levels ($r = 0.134$); being in a marriage or civil union somehow increases stress. Majority of the respondents were married or cohabiting. Being a spouse means taking on the role of someone's lifetime partner and there are societal expectations for this such as fidelity, nurturance, and partnership. Cooke and Rousseau (2012) found that family roles, together with work-role

expectations, led to role strains and, eventually, to parental stress. Panda (2011) found that 63% of working couples reported that they face conflicts with the spouse related to child care.

Educational attainment, significant at $p < 0.01$, had a very weak positive correlation with parental stress level ($r = 0.0002$). With higher educational attainment, parental stress levels increase minimally. Nilsen et al. (2014) found that higher education had moderate to strong associations to job demands, job control, and high job strain. Thus, educated parents would experience higher job demands, higher job control, and higher job strain, thus, imposing certain levels of parental stress.

Similarly, career ($r = 0.0017$) had a significant very weak positive correlation; being employed slightly increases parental stress levels. Sridevi and Maheswar (2015) presented the Work Stress Model where work environment stressors may come from different levels: the individual level (role overload, role conflict, and personality), group level (managerial behavior, lack of cohesiveness, and intragroup conflict), organizational level (climate and management styles), and extra-organizational level (family, economy, and quality of life). These had effects on the stress levels of the employees and have numerous consequences on their behavioral, cognitive, and physiological levels. Since majority of the parents were employed in the third sector, some stressors that might affect their parental stress levels could be at the group and organizational levels. Panda (2011) found that misunderstandings with the employer were the main reason for stress of their married respondents.

Career satisfaction ($r = 0.081$) had a very weak positive relationship with parental stress level; as career satisfaction level increased, parental stress levels slightly increased. This could be due to parents wanting to do good or even better to sustain the current level of satisfaction in their job. With current economic conditions, parents might feel that they should be satisfied with whatever occupation they have in order to provide their family a sense of financial and social security (Bowen et al., as cited in Hoboubi, Choobineh, Ghanavati, Keshavarzi, & Hosseini, 2017). However, work conflicts and work-family conflicts are both inevitable and may lead to parental stress.

Household income ($r = -0.281$, $p < 0.01$) had a significant weak negative relationship with parental stress levels; with a higher income, parental stress levels decrease. Financial stress causes depression and anxiety and, eventually, may affect the developing child (Hadadian

& Merbler, as cited in Lopez, Clifford, Minnes, & Ouellette-Kuntz, 2008). A higher income increases life satisfaction and emotional well-being to some extent (Kahneman & Deaton, 2010) and assuages some fears and concerns regarding financial security (Ponnet, as cited in Cronin et al., 2015).

Income source ($r = 0.21$, $p < 0.05$) had a significant weak relationship with parental stress levels; with a salary-based income, parental stress levels increase. The income source could be a cause for parental stress if seen through the Family Stress Model (Conger et al., as cited in Ahmed, 2005). Majority (75%) of the parents had salary-based incomes of PhP 0-10,000 (48%). This income source of the parents was inadequate and below the 2015 per capita poverty threshold of PhP 10,958 for the province of Laguna (Philippine Statistics Authority, 2016). If the monthly salary was not fixed but temporary or on a contractual basis, this could generate parental stress (Leininger & Kalil, as cited in Cronin et al., 2015). It is important for parents to have a flexible budget, other income sources, savings, and contingency plans.

The number of children had a weak positive relationship ($r = 0.377$) with parental stress levels; as the number of children increased, stress levels increased. More children will require more parental demands (e.g. household chores and child rearing activities), which could lead to higher parental stress levels (Deater-Deckard, 1998; Stephens, 2007). In addition, more children will require more financial resources for schooling and basic needs. This will limit the parents' budget for each child and may increase their financial stress (Ponnet, as cited in Cronin et al., 2015).

Being a primary caregiver had a significant very weak positive relationship ($r = 0.0098$) with parental stress levels. Very often, these are the mothers who care for the children, the elderly, and the sick aside from managing the household. The parenting and household demands could increase parental stress levels (Stephens, 2007).

Lastly, daily family bonding hours showed a weak positive relationship ($r = 0.383$) with parental stress; as family bonding hours increased, parental stress levels increased. Much as family bonding could be a coping strategy (Cronin et al., 2015) due to the experience of unity, it could also cause stress. Zangari (1997) looked into the experiences of family members on saturation, bonding, and leisure and found that bonding was not necessarily connected with leisure but with emotional work and doing chores. It was not leisurely for

parents as they see leisure as a time where there is no sense of responsibility for anyone. Family bonding requires planning, responsibility, attentiveness, and financial resources.

Effects of Parental Stress Levels to Child Memory Abilities

Using linear regression models, it was determined that none were significant indicators (see Table 5). This could be due to a large percentage of the parents having low parental stress levels. Still, all regression values were utilized to interpret possible causal relationships.

Parental stress levels affected VIM by -0.025; as stress levels increased by a point, scores in VIM decreased by -0.025. LE (P = -0.0126) was also negatively affected by parental stress levels. However, WM (P = 0.00502) was slightly positively affected.

Table 5. *Effects of Parental Stress Levels on Selected Child Memory Abilities (n=100)*

Child Cognitive Processes	Parental Stress Level
I. VIM (Faces Subtest)	-0.025 (0.0552)
Constant	26.44***
R-squared	-2.235 0.002
II. LE (Dots Location Subtest)	-0.0126 (0.056)
Constant	20.56***
R-squared	-2.271 0.001
III. WM (Digit Span Subtest)	0.00502 (0.0228)
Constant	4.171***
R-squared	-0.923 0

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

When parents suffer from stress, they become physically and emotionally less available to meet their child's need to play, explore, and interact, closing one significant avenue for learning for a certain period of time (Infant Mental Health Promotion, 2016). Parenting stress influences parenting styles and may give rise to harsh discipline behaviors or inconsistent and unsupportive parenting (Jackson et al., as cited in Coon, 2007) that may have adverse effects on child development (Corona et al., 2005). Generally, there is a lack of positive parent-child interactions and reduced caregiving capacities (National Scientific Council on the Developing Child, 2010) manifested by insensitive behaviors, detachment or passivity, less manifestations of physical affection, and low cognitive stimulation for the child.

Coon (2007) described that parental stress had certain impacts on the child's cognition and was related to lower levels of cognitive ability in school-aged children. This impact considers child characteristics, parental characteristics, and environmental characteristics. In addition, this impact considers how these "moderate the magnitude of the parenting stress" (p. 5), their perception, and manifestation of the stress and how the stress impacts the child. Similarly, Nievar and Luster (2006) found that parental stress was related to attention problems, lower levels of school readiness, lower levels of school ability, and lower levels of cognitive ability. Furthermore, high parental stress levels may result to difficult child temperament, behavior problems, low school readiness, and decreased academic achievement in early and middle childhood (Morales & Guerra, as cited in Cronin et al., 2015; National Scientific Council on the Developing Child, 2010; Ostberg & Hagekull, as cited in Coon, 2007).

Code (as cited in Pellisier, 2016) stated that parental stress can affect child cognition because it is contagious; therefore, the child may pick it up. Platt, Williams, and Ginsburg (2016) echoed that stress responses are transmitted from parent to child. As parents are affected by stressful life events, they may feel a dissatisfaction with the child or their relationship with the child, thus, increasing a child's anxiety. Negative parental thoughts and behaviors may spillover into parent-child interactions and, thus, can affect the child (Corona et al., 2005; Gutman et al., as cited in Coon, 2007). Goleman (1997) and Pellisier (2016) emphasized that the resulting child stress can impede the child's learning and memory storage abilities due to deficits that emerge in the child's cognitive abilities. The

impact of parental stress is like a cycle, impinging on child cognition and, again, affecting parental stress.

The decreased cognitive abilities are due to a weakened brain development in childhood (Code, as cited in Pellisier, 2016; National Scientific Council on the Developing Child, 2014). The resulting child stress gives rise to elevated stress hormone (cortisol) levels and may change the brain regions essential to emotional control, problem-solving, learning, attention, and memory (Shonkoff & Levitt, 2010). Sapolsky (2004) explained that chronic child stress withers the dendrites' length and number of branches in the hippocampus, a brain area important to memory functioning, learning, and stress responses (Luby, as cited in Castro, 2012). Recently, Essex et al. (as cited in Begley, 2011) emphasized that parental stress alters a gene called NEUROG1 which promotes neurogenesis, a crucial process for learning and memory.

Specifically, Goleman (1997) pointed out that stress has a negative impact on working memory, lessening the child's ability to hold in mind information needed to complete a certain task like remembering the words for a spelling test. Chronic stress produces high levels of the hormone cortisol which can lead to the death of brain cells in the hippocampus. In this study, parental stress had a slightly positive effect on working memory. This could be explained by the immediate impact of cortisol on the blood sugar level which increases the child's muscle power and memory power (Pellisier, 2016) for a short period of time or until the threat has subsided. However, this hormone production was designed not for chronic stress situations but only for life or death situations. In the long run, working memory and long-term memory will be affected.

Conclusions and Recommendations

Majority of the parents manifested low parental stress levels. Performance in the selected cognitive processes showed that majority of the students have high VIM performances; most have high LE performances; and lastly, most have low WM performances.

Educational attainment, career, household income, income source, and primary caregiver role had significant relationships to parental stress levels. Parental stress levels showed

minimal negative effects on VIM and LE except for WM.

For further studies, it is recommended to differentiate maternal and paternal stressors and stress levels to determine their positive and negative effects on the child and his cognition. In relation to this, defining specific parental stressors could determine which of these could be significant factors to child cognition.

Moreover, the test used to measure parental stress levels were from Western sources. Developing a local tool that will assess parental stress levels in the context of Filipino parenting may be necessary. It is recommended that the psychometric tests for child cognition should be normed for Filipino children since the tests were based on Western norms.

Parenting stress can be analyzed at several time periods or longitudinally to explore the fluctuations and impact on child well-being and cognition. This could also give more knowledge on the causal relationship of parental stress and child memory abilities or child cognition.

Qualitative data may also be taken from parents and children to explore emotions, thoughts, and behaviors related to stress. This knowledge may be helpful for parents, teachers, and other caregivers to make them more aware of their stressors and stress responses.

For parents, it is recommended to become more aware of their own stressors and how these affect their relationship with their child and other family members. They should learn to create personal stress management techniques for their welfare and for the child's well-being.

References

- Ahmed, Z. (2005). *Poverty, family stress & parenting*. Retrieved from <http://www.humiliationstudies.org/documents/AhmedPovertyFamilyStressParenting.pdf>
- Aldwin, C., Sutton, K., Chiara, G., & Spiro, A. (1996). Age differences in stress, coping, and appraisal: Findings from the normative aging study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 51(4), 179-188.

- Baddeley, A. (1992). Working memory. *Science*, 255, 556-559.
- Begley, S. (2011). Parents' depression and stress leaves lasting mark on children's DNA. Retrieved from <https://www.thedailybeast.com/parents-depression-and-stress-leaves-lasting-mark-on-childrens-dna>
- Berry, J., & Jones, W. (1995). The parental stress scale: Initial psychometric evidence. *Journal of Social and Personal Relationships*, 12, 463-472.
- Cash, D. (2007). *Cultural differences on the children's memory scale*. Retrieved from <http://oaktrust.library.tamu.edu/bitstream/handle/1969.1/ETDTAMU-1621/CASH-DISSERTATION.pdf?sequence=1&isAllowed=y>
- Castro, J. (2012). How a mother's love changes a child's brain. *Live Science*. Retrieved from <https://www.livescience.com/18196-maternal-support-child-brain.html>
- Clarke, L. H., & Korotchenko, A. (2011). Aging and the body: A review. *Canadian Journal of Aging*, 30(3), 495-510.
- Conger, R. D., Conger, K. J., Elder, J. H., Lorenz, F. O., Simons, R. L., & Whitbeck, L. B. (1992). A family process model of economic hardship and adjustment of early adolescent boys. *Child Development*, 63(3), 526-541.
- Cooke, R., & Rousseau, D. (2012). Stress and strain from family roles and work-role expectations. *Journal of Applied Psychology*, 69(2), 252-260.
- Coon, T. (2007). *The effect of parenting stress on children's cognitive development: Examining the variables of sex and race/ethnic origin* (Unpublished doctoral dissertation). University of Missouri-Columbia, Missouri, United States. Retrieved from <https://mospace.umsystem.edu/xmlui/bitstream/handle/10355/5032/research.pdf?sequence=3>
- Corona, R., Lefkowitz, E. S., Sigman, M., & Romo, L. F. (2005). Latino Adolescents' adjustment, maternal depressive symptoms, and the mother-adolescent relationship. *Family Relations*, 54, 386-399.
- Cronin, S., Becher, E., Christians, K., Maher, M., & Dibb, S. (2015). Parents and stress: Understanding experiences, context and responses. University of Minnesota Children's Mental Health eReview. Retrieved from <http://hdl.handle.net/11299/172384>
- Deater-Deckard, K. (1998). Parenting stress and child adjustment: Some old hypotheses and new questions. *Clinical Psychology: Science and Practice*, 5, 314-332.
- Goleman, D. (1997). *Emotional Intelligence*. New York: Bantam Books.

- Hoboubi, N., Choobineh, A., Ghanavati, F. K., Keshavarzi, S., & Hosseini, A. (2017). The impact of job stress and job satisfaction on workforce productivity in an Iranian petrochemical industry. *Safety and Health at Work, 8*(1), 67-71.
- Idris, M. (2011). Over time effects of role stress on psychological strain among Malaysian public university academics. *International Journal of Business and Social Science, 2*(9), 154-161.
- Infant Mental Health Promotion. (2016). *How Parental Stress Affects a Child's Learning*. Toronto: Infant Mental Health Promotion.
- Jepsen, D. (2008). Wechsler Intelligence Scale for Children (WISC-IV). *School Psychology Services*. Retrieved from <http://www.school-psychology.com.au/blog/wechslerintelligence-scale-for-children-wisc-iv/>
- Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences of the United States of America, 107*(38), 16489-16493.
- Lopez, V., Clifford, T., Minnes, P., & Ouellette-Kuntz, H. (2008). Parental stress and coping in families with and without developmental delays. *Journal on Developmental Disabilities, 14*(2), 99-104.
- Lugtu, R. (2013, June 17). What makes Filipinos happy? *The Manila Standard*. Retrieved from <http://manilastandard.net/business/business-columns/106000/what-makes-filipinos-happy.html>
- Luria, R., Sessa, P., Gotler, A., Jolicoeur, P., & Dell'Acqua, R. (2009). Visual short-term memory capacity for simple and complex objects. *Journal of Cognitive Neuroscience, 22*(3), 496-512.
- McLean, N., Tearne, J., Robinson, M., Jacoby, P., Allen, K., Cunningham, N., & Li, J. (2016). Older maternal age is associated with depression, anxiety, and stress symptoms in young adult female offspring. *Journal of Abnormal Psychology, 125*(1), 1-10.
- Meadows, S. (2002). Memory. In *The child as thinker: The development and acquisition of cognition in childhood*. London: Routledge.
- National Institutes of Mental Health. (2012). *Stresses of poverty may impair learning ability in young children*. Retrieved from <https://www.nih.gov/news-events/news->

- releases/stresses-poverty-may-impair-learning-ability-young-children
- National Scientific Council on the Developing Child. (2010). *Persistent Fear and Anxiety Can Affect Young Children's Learning and Development: Working Paper No. 9*. Retrieved from <http://www.developingchild.net>
- National Scientific Council on the Developing Child. (2014). *Excessive Stress Disrupts the Architecture of the Developing Brain: Working Paper No. 3*. Updated Edition. Retrieved from www.developingchild.harvard.edu.
- Nievar, M. A., & Luster, T. (2006). Developmental processes in African American families: An application of McLoyd's theoretical model. *Journal of Marriage and Family*, 68, 320-331.
- Nilsen, C., Andel, R., Fors, S., Meinow, B., Mattsson, A. D., & Kareholt, I. (2014). Associations between work-related stress in late midlife, educational attainment, and serious health problems in old age: a longitudinal study with over 20 years of follow-up. *BMC Public Health*, 14(878), 1-12.
- Panda, U. K. (2011). Role conflict, stress and dual-career couples: An empirical study. *Journal of Family Welfare*, 57(2), 72-88.
- Pellisier, H. (2016). Stress and your child's brain. Retrieved from <http://www.greatschools.org/gk/articles/how-stress-affects-your-child/>
- Philippine Statistics Authority. (2016). Official poverty statistics of the Philippines. Retrieved May 11, 2016, from [http://psa.gov.ph/sites/default/files/1st Sem 2015 Poverty_Publication.pdf](http://psa.gov.ph/sites/default/files/1st_Sem_2015_Poverty_Publication.pdf)
- Platt, R., Williams, S., & Ginsburg, G. (2016). Stressful life events and child anxiety: Examining parent and child mediators. *Child Psychiatry Hum Dev*, 47(1), 23-34.
- Rouse, K. (1998). Resilience from poverty and stress. *Human Development and Family Life Bulletin*, 4(1), 1-3.
- Sapolsky, R. M. (2004). *Why zebras don't get ulcers* (3rd ed.). Virginia: MacMillan Publishing Services. Retrieved from <https://www.mta.ca/pshl/docs/zebras.pdf>
- Shonkoff, J. P., & Levitt, P. (2010). Neuroscience and the future of early childhood policy: Moving from why to what and how. *Neuron*, 67, 689-691.
- Soltanifar, A., Akbarzadeh, F., Moharreri, F., Soltanifar, A., Ebrahimi, A., & Mokbher, N. (2015). Comparison of parental stress among mothers and fathers of children with

- autistic spectrum disorder in Iran. *Iranian Journal of Nursing and Midwifery Research*, 20(1), 1-7.
- Sridevi, B., & Maheswar, V. (2015). Management of stress and coping strategies. *International Journal of Multidisciplinary Approach and Studies*, 2(6), 60-67.
- Stephens, K. (2007). Parenting stress: Find creative ways to cope. *Parenting Exchange*. Retrieved from <http://www.easternflorida.edu/community-resources/child-development-centers/parent-resource-library/documents/parenting-stress-ways-to-cope.pdf>
- Tach, L. (2012). Family complexity, childbearing, and parenting stress: A comparison of mothers' and fathers' experiences. *National Center for Family & Marriage Research*. Retrieved from <http://crw.princeton.edu/workingpapers/WP12-15-FF.pdf>
- Tachibana, Y., Fukushima, A., Saito, H., Yoneyama, S., Ushida, K., & Kawashima, R. (2012). A new mother-child play activity program to decrease parenting stress and improve child cognitive abilities: A cluster randomized controlled trial. Retrieved from <https://doi.org/10.1371/journal.pone.0038238>
- Wechsler, D. (1974). *Manual for the Wechsler intelligence scale for children, revised*. New York: Psychological Corporation.
- Zangari, M. (1997). *Family members' experience of saturation, bonding, and leisure: A feminist perspective*. (Unpublished doctoral dissertation). Virginia Polytechnic Institute and State University. Retrieved from https://theses.lib.vt.edu/theses/available/etd-10032007172207/unrestricted/LD5655.V856_1997.Z364.pdf