The Relationship Between Learning Motivation and Academic PerformanceAmong Student Parents

ABSTRACT

This study highlights the multifaceted nature of learning motivation among student parents and underscores the critical role of tailored institutional support in addressing their unique challenges, particularly for separated individuals who face compounded stressors. The respondents of the study included 101 student parents. It used descriptive-correlational design utilizing proportionate stratified random sampling. Data were treated using frequency, percentages, mean, standard deviation, T-test, oneway ANOVA, Duncan test for post hoc comparison and Pearson correlation. Findings revealed that majority of the student parents belonged to 18-24 age group, predominantly female, mostly lived with a partner, had a first child aged 0-4, belonged to poor families, and mostly with parents attended college without completing a degree. The respondents exhibited exceptionally high learning motivation, with a majority achieving superior academic performance. There were no significant differences observed in learning motivation based on sex, age of the first child, parents' monthly income, and education level of both the father and the mother, however, only the marital status was found to have significant difference. Moreover, this study showed learning motivation may not strongly impact academic performance. Hence, it is recommended that collaborative efforts from policymakers, school administrators, and instructors are encouraged to adopt inclusive support among these student parents.

Keywords: Academic performance, Learning motivation, Student parents, Descriptive-correlational design

INTRODUCTION

A successful transition from high school to college has been demonstrated by extensive study to be an essential component for success in higher education (Beach, 2019). In the landscape of higher education, the pursuit of academic performance has numerous factors, such as students' motivation and competence for learning that affect academic performance. Student parents are individuals enrolled in college or university who also have the responsibility of raising children. They often represent a diverse demographic, including single parents, married, or partnered parents, and those with children of varying ages. They may come from various socioeconomic backgrounds and

often face additional financial pressures and time constraints compared to their nonparenting peers (Roy et al., 2022).

According to Vyskocil (2018), student parents are in a special position as they pursue degrees in higher education institutions, and they encounter several obstacles when trying to further their education. In particular, the researcher who is a higher education instructor and at the same time a guidance advocate observed that while some student parents can succeed in their academic journey a number of student parents in higher education sometimes have difficulties and challenges in the educational setting, such as academic difficulties, monetary strain, time management, stigma and stereotyping, childcare and many more. Addressing these challenges requires a combination of different factors, such as motivation and competence to continue and be successful in their academic journey.

Motivation has long been recognized as a critical determinant of academic achievement (Ryan & Deci, 2017). For student parents, however, the dynamics of motivation are uniquely shaped by their dual roles, requiring a careful analysis of the elements that support or undermine their academic performance. This study aimed to explore the mediating role of student parents' competence in the complex relationship between their learning motivation and academic performance. Scholars have acknowledged the multifaceted nature of competence, encompassing not only cognitive abilities but also the practical skills and adaptive strategies required to effectively balance the demands of academic and parenting responsibilities (Dow-Fleisner et al., 2023). In this context, competence serves as a crucial mediator, potentially influencing the translation of learning motivation into tangible academic outcomes among student parents.

According to a study by the Commission on Higher Education (CHED), there are approximately 1.5 million student parents in the Philippines. These students are more

likely to come from low-income families and to be female. They may have to pay for childcare, transportation, and other expenses while paying for tuition and other educational costs. For student parents, this may make it more difficult for them to study for college. There are questions about how well these student parents handle and deal with these difficulties. Thus, this study contributes to a better understanding of the connection between student parents' academic performance and their motivation to learn. It determined how the learning desire of student parents affects their decision to pursue higher education through the state.

METHODOLOGY

This study used descriptive-correlational design utilizing regression analysis. The descriptive-correlational design determined the level of competence in pursuing higher education, learning motivation, and academic performance. The site of the study was the state higher education institution of Camiguin Province. This study utilized proportionate stratified random sampling with a sample size of at least 101 student parents identified by the student affairs office. The researcher utilized the survey questionnaire in gathering the primary data of which a consent letter was appended during the data collection to ensure the respondents on the confidentiality of their responses and ethical considerations. This questionnaire was adapted from the study of Dayel et al. (2018), a cross-sectional study using the motivated strategies for learning questionnaire which assesses the learning motivation. Certain items were rephrased to capture the motivational factors relevant to this demographic. The adapted questionnaire underwent content validation by three experts pilot testing. Following data collection, the researcher tallied and recorded the data subjected for statistical treatment such as frequency and percentage, mean and standard deviation, T-test, ANOVA, and Pearson correlation.

Focus group discussion was also applied to this study to provide a deeper understanding of the quantitative findings.

Study Questions

- 1. What is the demographic profile of the student parents?
- 2. What are the student parents' perceived level of learning motivation in terms of:
 - 2.1 Intrinsic Motivation
 - 2.2 Extrinsic Motivation
- 3. What is the academic performance of student parents?
- 4. Is there a significant difference in the learning motivation of student parents when grouped according to their profile?
- 5. Is there a significant relationship between student parents' level of learning motivation and academic performance?

RESULTS AND DISCUSSION

Demographic Profile of the Respondents

Table 1 shows the profile of the respondents. Most student parents were aged 18 to 24 (70.3%) and were predominantly female (72.3%). Most lived with a partner (61.4%) and had a first child aged 0 to 4 (68.3%). Financially, 92.1% earn less than 10,957 pesos monthly. While 25.7% of fathers attended college without a degree, 9.9% were graduates. Similarly, 40.6% of mothers attended college without completing a degree.

Table 1: Summary of Student Parents' Profile

<u>Profile</u>	Frequency	Percentage (%)
Age (in years)	<u>_</u>	
<mark>18-24</mark>	<mark>71</mark>	<mark>70.3</mark>
<mark>25-31</mark>	<mark>24</mark>	<mark>23.8</mark>
<mark>32-39</mark>	<mark>6</mark>	<mark>5.9</mark>
<mark>Sex</mark>		
<mark>Male</mark>	<mark>28</mark>	<mark>27.7</mark>
<mark>Female</mark>	<mark>73</mark>	<mark>72.3</mark>
Marital Status		
Single Parent	<mark>25</mark>	<mark>24.8</mark>

Lived-In	62 9 0 5	<mark>61.4</mark>
<u>Married</u>	<mark>9</mark>	8.9
Widowed_	<mark>0</mark>	<mark>0.0</mark>
Separated	<mark>5</mark>	<mark>5.0</mark>
Age of the First Child		
<mark>0-4</mark>	<mark>69</mark> 21 11	<mark>68.3</mark>
<mark>5-9</mark>	<mark>21</mark>	<mark>20.8</mark>
<mark>10-13</mark>	<mark>11</mark>	<mark>10.9</mark>
Parents Monthly Income		
< 10957	<mark>93</mark> 8	<mark>92.1</mark>
<mark>10,957-21,193</mark>	<mark>8</mark>	<mark>7.9</mark>
Father Education		
Elementary Level	19 4 18 24 26	18.8
Elementary Graduate	<mark>4</mark>	<mark>4.0</mark>
High School Level	<mark>18</mark>	<mark>17.8</mark>
High School Graduate	<mark>24</mark>	<mark>23.8</mark>
College Level		<mark>25.7</mark>
College Graduate	<mark>10</mark>	9.9
Mother Education		
Elementary Level	<mark>3</mark>	3.0
Elementary Graduate	<mark>3</mark> 6 19	5.9°
High School Level	<mark>19</mark>	<mark>18.8</mark>
High School Graduate	<mark>17</mark>	<mark>16.8</mark>
College Level	<mark>41</mark>	40.6
College Graduate	<mark>14</mark>	<mark>13.9</mark>
Post Graduate Level	1	1.0
<u>Total</u>	<mark>101</mark>	100.0

Student Parents' Level of Learning Motivation

Table 2 shows the level of learning motivation among student parents, specifically focusing on intrinsic motivation. The mean score for the total measure of intrinsic motivation was 3.38, with a standard deviation of 0.33, indicating a high level of motivation.

Table 2: Student Parents' Level of Learning Motivation in terms of Intrinsic Motivation

Indicators	<mark>Mean</mark>	SD	Interpretation
1. In a class, I study course material that	<mark>3.30</mark>	<mark>.50</mark>	High Motivation
challenges me so I can learn new things			
2. I think I will be able to use what I learn in a	<mark>3.20</mark>	<mark>.72</mark>	Moderate Motivation
course in other courses.			
3. I'm certain I can understand the most difficult	<mark>2.95</mark>	<mark>.64</mark>	Moderate Motivation
material presented in the readings for this course.			
4. I'm confident I can learn the basic concepts	<mark>3.56</mark>	<mark>.54</mark>	High Motivation
taught in this course			

5. I'm confident I can understand the most	3.26	<mark>.59</mark>	High Motivation
complex material presented by the instructor in a			
<mark>course.</mark>			
6. In a class like this, I study course material that	<mark>3.24</mark>	.72 Mc	oderate Motivation
arouses my curiosity, even if it is difficult to learn.			
7. I am very interested in the content area of this	<mark>3.57</mark>	<mark>.54</mark>	<mark>High Motivation</mark>
<mark>course.</mark>			
8. I'm confident I can do an excellent job on the	<mark>3.24</mark>	.55 <i>M</i> c	oderate Motivation
assignments and tests in this course.			
9. I am confident I can perform well in class.	<mark>3.27</mark>		<mark>High Motivation</mark>
10. The most satisfying thing for me is the ability	<mark>3.48</mark>	<mark>.58</mark>	High Motivation
to understand the content of the course as			
thoroughly as possible.			
11. The course material in this class is useful for	<mark>3.74</mark>	<mark>.44</mark>	<mark>High Motivation</mark>
me to learn.			
12. I follow course assignments that I can learn	3.51	.50	High Motivation
from even if they don't guarantee a good grade.		<u> </u>	
13. I like the subject matter of this course.	3.61		<mark>High Motivation</mark>
14. I'm certain I can master the skills being taught	3.41	. <mark>53</mark>	High Motivation
in this class.			
Total Measure	A0000		High Motivation
Note: 3.26-4.00 High Motivation	1.76-2.50		<mark>or Motivation</mark>
2.51-3.25 Moderate Motivation	1.00-1.75	No	<u>Motivation</u>

Firstly, student parents express high confidence in their ability to engage with challenging course material, as evidenced by mean scores of 2.95 to 3.56 across various indicators. This suggests that they are eager to tackle difficult concepts and are confident in their capacity to learn and understand complex material. Moreover, their high levels of interest and curiosity in the course content, as reflected in mean scores of 3.24 to 3.74, indicate a genuine enthusiasm for the subject matter, further contributing to their motivation to learn.

Additionally, student parents exhibit strong self-belief in their academic abilities, with mean scores indicating high confidence in their performance on assignments, tests, and class participation. This confidence extends to the usefulness of course material and their willingness to engage with learning opportunities even if they do not guarantee a good grade.

The results imply that student parents are highly motivated intrinsically to learn and engage with their classes. This is particularly noteworthy given the additional

challenges they may face, such as balancing academic responsibilities with parenting duties.

Moreover, many student parents pursue a college degree to enhance their job prospects and earning potential. Higher education is often seen as a pathway to betterpaying jobs, which can provide greater financial stability for themselves and their families. As what one of the respondents said, "Sa panahonkaron sir lisud kayo ngaisa ray motrabahosapamilya kay grabe ka mahal ang panaliton. Ug naa kay mahumanngakursomuragdaghanpud ka oportunitiesngamakatrabaho." (Nowadays sir, its hard if only one is working in the family or having an income because of high prices of basic commodities. I believe sir that more opportunities will come to you if you have a degree.)

The study of self-determined motivation among students in the context of online pedagogical activities by Chemsi et al. (2020) provides relevant insights into intrinsic motivation. Additionally, the research on parents' influence on college students' academic motivation and achievement by Kriegbaum et al. (2016) offers valuable perspectives on the role of parental support and its impact on student motivation. These references collectively support the notion that student parents are highly motivated intrinsically to learn and engage with course material.

The findings suggest that institutions can leverage this high level of motivation by providing them tailored support services and resources that nurture their intrinsic drive for learning. By recognizing and reinforcing their enthusiasm and confidence in their academic pursuits, institutions can empower them to thrive academically and achieve their educational goals.

Conversely, Table 3 presents the level of learning motivation among student parents in terms of extrinsic motivation.

Table 3: Student Parents' Level of Learning Motivation in terms of Extrinsic Motivation

Indicators	<mark>Mean</mark>	SD	Interpretation
1. If I study in appropriate ways, then I will be	<mark>3.62</mark>	<mark>.51</mark>	High Motivation
able to learn the material in this course.			
2. Getting a good grade in a course is my	<mark>3.65</mark>	<mark>.48</mark>	High Motivation
greatest motivation.			
3. If I try hard enough, then I will understand the	<mark>3.69</mark>	<mark>.46</mark>	High Motivation
course material			
Total Measure	<mark>3.66</mark>	<mark>.34</mark>	High Motivation
Note: 3.26-4.00 High Motivation	1	.76-2	.50 Poor
<i>Motivation</i>			
2.51-3.25 Moderate Motivation	1.00-1.7	' 5	No Motivation

Table 3 shows that the mean score for the total measure of extrinsic motivation was 3.66, with a standard deviation of 0.34, indicating a high level of motivation among student parents in this aspect. Examining each indicator individually, it is evident that student parents are strongly motivated by extrinsic factors.

Student parents express high confidence in their ability to learn course material through appropriate study methods, as indicated by a mean score of 3.62. This suggests that they believe in the effectiveness of their study strategies and are motivated by the prospect of mastering the material through their efforts. Additionally, the high mean score of 3.69 for the indicator "If I try hard enough, then I will understand the course material" further underscores their determination and persistence in achieving academic success. As one respondent said that being a parent and at the same time a student, her biggest challenge is to wisely manage her time, her role in the family, and even her responsibilities of their church in support of her husband. "Lisudusahay e-manage ang time sir kay sapawna ang responsibilidadperomakaya ra man hinoon. One at a time ra gyud." ("Sometimes it's difficult to manage time, sir because the responsibility is overwhelming, but you can handle it. It's only one at a time.")

Furthermore, the indicator "Getting a good grade in a course is my greatest motivation" received a very high mean score of 3.65, indicating that student parents were significantly driven by the desire to attain favorable grades. While extrinsic

motivations such as grades may be common among students, this finding suggests that student parents place considerable importance on academic achievement as a means of validating their efforts and progress.

In summary, the results imply that student parents exhibit a strong orientation towards extrinsic motivators such as grades and perceived outcomes of effort. Institutions can leverage this motivation by providing clear expectations, constructive feedback, and opportunities for recognition and reward. Additionally, fostering a supportive and encouraging learning environment can help them maintain their motivation and achieve their academic goals despite the challenges they may face. By recognizing and reinforcing their extrinsic motivators, institutions can empower student parents to succeed academically and fulfill their potential.

Additionally, based on observations many student parents were motivated to learn and engage more in their classes if they understand what they are reading. And if the course materials given to them are contextualized and have clear instructions.

According to the study of Bolkan (2015) the notion that the effect of instructor clarity on learning is conditioned upon students' motivation revealed that even with clear instruction, test scores were not increased when students' motivation to process was low. However, when students' motivation to process was high, motivation interacted with instructor clarity to increase test scores.

The study found that also learning materials have a positive effect on student motivation based on the significant difference in test results, and the percentage value of each motivational construct increased (Anuar et al., 2021)

Moreover, the study of Pongracic (2022) posited that grades serve as a significant motivational factor in the learning process, influencing student motivation and overall educational outcomes. On the other hand, motivation, whether internal or

external, did not positively impact the grades of peripheral university students. Grades were not influenced by the level of motivation observed.

Table 4 provides a consolidated overview of the level of learning motivation among student parents, encompassing both intrinsic and extrinsic motivation. It reveals that the mean score for intrinsic motivation was 3.38, with a standard deviation of 0.33, indicating a high level of motivation among student parents to engage in learning for its inherent rewards and enjoyment. Similarly, the mean score for extrinsic motivation was 3.66, with a standard deviation of 0.34, reflecting a high level of motivation among student parents driven by external factors such as grades and perceived outcomes of effort.

Table 4: Consolidated Findings of the Student Parents' Level of Learning Motivation in terms of Intrinsic and Extrinsic Motivation

	Indica	itors	Mean	SD	Interpretation
Intrins	ic Motivation	า	3.38	.33	High Motivation
Extrins	sic Motivatio	on	3.66	.34	High Motivation
	Total Me	easure	3.52	.31	High Motivation
Note:	3.26-4.00	/ High Mo	tivation	1.76-2.50	Poor Motivation
	2.51-3.25	Moderate	e Motivation	1.00-1.75 No Motivation	

When considering the total measure, which combines both intrinsic and extrinsic motivation, the mean score was 3.52, with a standard deviation of 0.31, indicating an overall high level of motivation. This suggests that student parents were highly motivated to learn and engage in their academic pursuits, driven by both internal factors such as interest and curiosity, as well as external factors such as grades and perceived outcomes of effort. Achieving a higher level of education can enable parents to provide more opportunities for their children, including access to better schools, extracurricular activities, and overall improved quality of life.

One of the respondents said that going to college is not just for her benefit as she said, "I always remind myself that pursuing this degree is not just for my own sake or should I say for my happiness, but this is also for my daughter, my partner and to my parents as well. The study by Liu et al. (2019) provides relevant insights into the multiplicative effect of intrinsic and extrinsic motivation on academic performance. A student parent might have high intrinsic motivation because they are genuinely interested in their field of study and find learning enjoyable. Simultaneously, they might have high extrinsic motivation driven by the need to secure a better job to support their family financially. The combination of these motivations can lead to a multiplicative effect where the student is more committed, puts in more effort, and ultimately performs better academically than they would if they were motivated by just one factor. In addition, the findings also underscore the complex and multifaceted nature of learning motivation among student parents. While intrinsic motivation reflects a genuine enthusiasm for learning and engagement with course material, extrinsic motivation highlights the importance of external rewards and incentives in driving academic performance. By recognizing and addressing both intrinsic and extrinsic motivators, institutions can support the diverse needs and preferences of student parents, ultimately fostering a positive and conducive learning environment that promotes academic success and personal growth.

Academic Performance of Student-Parents

Table 5 shows that the majority of student parents, comprising 36.6% of the total sample, achieve a superior level of academic performance. This indicates that a significant portion of student parents excel in their studies, demonstrating strong dedication and proficiency in their academic pursuits.

Table 5: Academic Performance of Student-Parents

Academic Performance	Frequency	Percentage (%)
Excellent	8	7.9
Superior	37	36.6
Very Good	36	35.6
Good	16	15.8
Fair/Passing	3	3.0
Failed	1	1.0
Total	101	100.0

Note: Mean (SD) = 3.28 (.99) Description: Very Good

The data further show that there were 35.6% of student parent who attained a very good academic performance, highlighting their overall success and competence in their coursework. Moreover, 7.9% of them achieved an excellent level of academic performance, indicating exceptional achievement and mastery of course material. These findings suggest that a substantial proportion of student parents are capable of excelling academically despite the challenges they may face in balancing their academic responsibilities with family obligations. Furthermore, 15.8% achieved a good level of academic performance, indicating solid achievement and competency in their coursework. Additionally, a small percentage comprising 3% of the sample, achieved a fair or passing level of academic performance, while only 1% reported having failed. While these lower performance levels are less common among them, they still underscore the importance of providing tailored support and resources to address academic challenges and promote student success.

The data imply that student parents demonstrate a range of academic performance levels, with the majority achieving superior or very good performance. A study set out to investigate the relationship between learning engagement, motivation, and academic performance among university nursing students. This is supported by Sturges et al. (2016) that there was a significant relationship between students' GPAs, the number of hours they reported studying, their motivation, and their academic performance.

Significant Difference on the Learning Motivation of StudentParents When Grouped According to Their Profile

Among the demographic profile of the student parents such as age, sex, age of the first child, socio-economic status with reference to parents' monthly income, and parents' educational attainment, only marital status was found to have a significant difference in the learning motivation of student-parents. This finding is supported in Table 4 demonstrating that there are significant differences in learning motivation among student parents when grouped by marital status, particularly in terms of intrinsic motivation and the total measure of learning motivation.

Table 6: Test of Difference on the Learning Motivation of StudentParents When Grouped According to Marital Status Profile

-		Marital St	atus Group		F-	
Learning Motivation	Single Parent (n=25)	Lived-in (n=62)	Married (n=9)	Separated (n=5)	value (p- value)	Remarks
Intrinsic Motivation	3.42 ^b ±.29	3.38 ^b ±.33	3.53 ^b ±.29	2.96 ^a ±.35	3.800* (.013)	Significant
Extrinsic Motivation	3.64±.38	3.65±.33	3.85±.18	3.47±.38	1.548 (.207)	Not significant
Total Measure	3.53 ^b ±.31	3.51 ^b ±.30	3.69 ^b ±.23	3.21 ^a ±.36	2.766* (.046)	Significant

Note: Analysis is based One-way ANOVA test not significant at a .05 level

For intrinsic motivation, the one-way ANOVA test reveals a significant F-value of 3.800 with a corresponding p-value of 0.013. Post-hoc comparison using the Duncan test indicated that single parents (mean = 3.42) and married student parents (mean =

3.53) exhibited higher levels of intrinsic motivation compared to those who are separated (mean = 2.96). This finding suggests that marital status may influence the internal drive and enthusiasm for learning among student parents, with single and married individuals showing greater intrinsic motivation. Moreover, the table reveals the significant difference of the student parents' total measure of marital status with an F-value of 2.766 and a p-value of 0.046. The post-hoc comparison indicated that single parents and married student-parents had higher total learning motivation scores compared to separated student-parents.

Furtehrmore, the data show thatamong the marital status of respondents, the separated student-parents were significantly less motivated both intrinsically and overall compared to their peers in other marital status categories. Separated student parents were often the primary or sole providers for their children. Separation can be a highly stressful and emotionally taxing experience, leading to feelings of sadness, anxiety, and depression. These emotional burdens can diminish a person's motivation and focus on other areas, including education. Moreover, separated student-parents might face increased financial difficulties, as they may have to manage household expenses and child-rearing costs on a single income. Financial stress can lead to a decreased focus on academic goals and lower motivation.

A respondent having one child and separated said that "Kailangan ko mahumaneskwela sir kay basin makuaan ra akongsala ko saako parents ug para pudsa future saakonganakmaogyudna ang priority naku sir." (I need to finish school, sir, because to make at least lessen my mistake to my parents and for the future of my child, that is my priority, sir.) Furthermore, as elaborated in the study of Zhao and Mei (2016) on college students' motivation differences in the online learning environment and what characteristics of learners could exert influence on their motivation found that learners'

learning motivation was affected by learners' characteristics as gender, employment status, and marital status.

Table 7 presents the results of Pearson correlation coefficients (R-values) and corresponding p-values indicating that there were no significant relationships between learning motivation and academic performance.

Table 7: Test of Relationship between the Student Parents' Level of Learning Motivation and their Academic Performance

Level	of	Learning	Academic Performance		Remarks
Motivation	n		r-value	p-value	
Intrinsic			.009	.929	Not significant
Extrinsic			.093	.356	Not significant
Total Mea	asure		.080	.428	Not significant

Note: Analysis is based on Pearson Correlation Not Significant (p>.05)

Specifically, intrinsic motivation, extrinsic motivation, and total learning motivation correlation coefficients ranging from 0.009 to 0.093, with p-values exceeding 0.05, suggest that learning motivation may not strongly influence academic performance among student parents in this context.

These results suggest that there were no strong correlations between the level of learning motivation and academic performance among student-parents in this analysis. Other factors beyond learning motivation may have a more substantial influence on academic performance among student-parents. Moreover, the findings suggest that the motivations traditionally believed to influence academic success might not hold the same weight for student-parents, possibly due to unique challenges they face such as balancing academic responsibilities with parenting duties. This implies that simply having high motivation, whether internal or external, does not guarantee strong academic outcomes.

This is also an experience of one of the respondents, who said that being a mother at the same time a student makes it very hard to handle academic responsibilities according to her. However, she always makes sure that her academics are good and that be a good mother as well. "It is not easy to be a mother at the same time as a student sir, I struggled a lot with my time management and sometimes I miss other activities in school." However, several studies have proved that learning motivation positively correlates with academic performance. Afzal et al. (2010), revealed that student motivation and academic performance have a significant relationship. Hamid and Singaram (2016) posited that individuals' self-regulation of cognition, motivation, and behavior mediates the connections between the person, situation, and academic performance.

Conclusion

This study concluded that while intrinsic motivation among student-parents varies significantly based on age, with younger individuals demonstrating lower motivation compared to their older counterparts, other demographic factors such as sex, age of the first child, parents' monthly income, and parental education levels do not substantially impact learning motivation. However, marital status emerges as a significant determinant, particularly influencing intrinsic motivation and the overall measure of learning motivation. Moreover, this study showed learning motivation may not strongly impact academic performance.

Consent

As per international standards or university standards, Participants' written consent has been collected and preserved by the author(s).

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- 2.
- 3.

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