

Relationship between Meta-Cognitive Learning Skills and Academic Performance among Orphaned Secondary School Students of Kenya

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Abstract The study investigated the relationship between meta-cognitive learning skills and academic performance among orphaned secondary school students of Kenya. The research was informed by Social Cognitive Theory. This study adopted an ex-post-facto research design with which a saturation sampling technique was employed. The study population constituted 300 secondary school going orphans and 23 principals. The sample of the study comprised 300 secondary school going orphans and 7 principals picked out through saturated and simple random sampling respectively. The research instruments that were used were students' questionnaires, document analysis and interview guide for the head teachers. The validity of the research instrument was ensured through expert judgments by University lecturers in the department of psychology. To test the reliability of the instruments, the researcher employed the test-retest and correlation coefficient of 0.891 was reported. The Pearson Product-Moment correlation coefficient ($r = .957$) computed indicated that there was high positive correlation between meta-cognitive learning skills and academic achievement among orphaned secondary school among orphaned secondary school students. The study recommended that the schools should equip orphans with lifelong survival skills such as social, moral, cognitive and emotional skills to enable the orphans develop proper meta-cognitive skills in the community following discharge from the mother institution.

Keywords Relationship, Meta-Cognitive learning skills, Academic performance, Orphaned students, Secondary school, Kenya

1. Introduction

Kenya has lost 1.5 million adults, who have left behind about 1.3 million orphans under 18 years of age (Government of Kenya, 2013). In Kenya, there are several orphanages, which have been established to care for children orphaned by HIV/AIDS, and provide them with education. The problem of children starts long before the death of a parent. Death is merely the culmination of a period of sickness, often followed by inadequate family guidance and emotional support, and limited support to education, inadequate socialization, nutrition, material and financial support. Self-regulated learners' proactive qualities and self-motivating abilities help to distinguish them from their peers. Research shows that self-regulated students are more engaged in their learning. These learners commonly seat themselves toward the front of the classroom (Labuhn, Zimmerman, & Hasselhorn, 2010), voluntarily offer answers

to questions (Elstad & Turmo, 2010), and seek out additional resources when needed to master content (Clarebout, Horz, & Schnotz, 2010). Most importantly, self-regulated learners also manipulate their learning environments to meet their needs. For example, researchers have found that self-regulated learners are more likely to seek out advice (Clarebout, 2010) and information (De Bruin, 2011) and pursue positive learning climates (Labuhn, 2010), than their peers who display less self-regulation in the classroom. Due to their resourcefulness and engagement, it is not then surprising that findings from other studies suggest that self-regulated learners also perform better on academic tests and measures of student performance and achievement (Schunk & Zimmerman, 2007; Zimmerman, 2008). In a study of high school students, Labuhn (2010) found that learners who were taught SRL skills through monitoring and imitation were more likely to elicit higher levels of academic self-efficacy (i.e., confidence) and perform higher on measures of academic achievement compared to students who did not receive SRL instruction. It seems as though SRL can make the difference between academic success and failure for many students (Kistner, Rakoczy, & Otto, 2010).

The Rogers theory was applicable to the study in that

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orphans need responsible people like teachers to take care of them. It is necessary for the orphaned children to develop a sense of self awareness and accept their fate in life and move on for this can either affect their attitudes, feelings and even behaviors that may end up failing in their education to the extent that some children may even drop out of school. It is important that there is need to have positive relationship between the orphaned children and whoever is responsible for their wellbeing for example teachers who spend most of the time with the orphans at school need to have positive relationship with the affected children so that they do not feel isolated and this will promote their sense of worth and even boost their academic skills.

Chatzipanteli and Digelidis, (2011) revealed that meta-cognitive prompting has significant influence on students' performance. The above study looked at the performance in physical education but not academic achievement which the current study looked at thus filling the gap. Furthermore, the reviewed study targeted younger learners of 13 years old but the current study looked at older learners. In another study, Coutinho, (2007) indicates that as students with good metacognition also have strong mastery goals whereas students with performance goals may or may not have good metacognition. The above reviewed study was quantitative in nature and it lacked qualitative aspects which could have provided a deeper in depth understanding of the phenomenon under investigation. The present study therefore adopted a mixed method to fill in gaps in literature. Moreover, was carried out among any undergraduate students and not secondary school students as was in the present study. Huang and Fernandes (2011) revealed significant correlations between metacognitive awareness, exam scores and grade point average (GPA). Both knowledge of cognition and regulation of cognition significantly contributed to the prediction of variation in students' GPAs, with regulatory skills overweighing knowledge of cognition as a predictor of academic achievement.

Vrieling, Bastiaens & Stijnen (2012) from Australia indicate that student teachers' use of metacognitive skills increased significantly in learning environments with increased SRL opportunities. Similarly, Eluemuno and Azuka (2013) revealed a positive relationship between metacognitive skills and academic performance such that developing metacognitive skills of a student will lead to the improvement of his/her academic performance in English Language. The above reviewed study was quantitative in nature and it lacked qualitative aspects which could have provided a deeper in depth understanding of the phenomenon under investigation. In contrast, Robertson (2012) from South Africa revealed that learning styles along with the deep and metacognitive learning strategies were found to have no meaningful relation with academic performance. Rooyen, (2012) indicated that training in metacognitive Strategies coincided with an increase in academic performance. Abdi (2012) in Kenya found showed that there is a correlation between the metacognitive beliefs and

the academic achievement.

There are no studies that have been done in Bondo-sub County to evaluate the relationship between self-regulation and academic achievement of orphaned students. It is on this basis of what orphaned children experience and scanty studies that prompted the researcher to conduct the current study which looked into the relationship between self-regulation and academic achievement of orphaned students (TAC Report, 2011). MoE (2014), Siaya County had 16,261 candidates who sat for KCSE in 2013 and achieved a mean score of 36.0325. County Director of Education, (2015), education statistics indicate that out of 16,261 candidates, 17.3% (2813) were orphans out of which 18.21% (512) scored C+ and above in KCSE 2013, while 33.23% (4,469) of 13,448 students with their parents scored C+ and above in KCSE 2013. Other studies have looked at children's compliance with mothers' requests under different conditions and found that, it was easier for children to comply when they agreed with the mother's request. Research shows that self-regulated students are more engaged in their learning. Furthermore, other studies revealed that, depending on the outcome measure, self-regulation, self-efficacy, and test anxiety emerged as the best predictors of performance. In addition, other studies found that familial societal and school factors, family factors were the most significant factors in relation to resilience. It is clearly important to develop self-understanding and healthy self-esteem. In the present study, the relationship between meta-cognitive learning skills and academic performance among orphaned secondary school children in Bondo Sub-county of Kenya was investigated.

2. Research Methodology

The study used ex-post-facto research design. It is also commonly used when facts have already occurred (Kerlinger and Rint 2010). Ex-post-facto research design is used in this study because, the children were already orphaned, existing examination results were used, and the fact that the effects and causes of differences between the two groups of children (orphans and non orphans) had already occurred. The 23 head teachers and 300 orphaned secondary school orphans in Bondo Sub-county were targeted as respondents in this study (CDEO's report 2015). The sample constituted 300 orphaned secondary school children and 7 head teachers chosen through saturated and simple random sampling respectively. This study picked seven schools at random from which the 7 head teachers were used as respondents as recommended by Jwan (2010). The questionnaire adopted the Likert scale method whereby respondents had to respond to every statement using a structured format: Strongly Agree (SA), Agree (A), Not Sure (NS), Disagree (D) and Strongly Disagree (SD). In order to pre-test the questionnaire on the length, content, question wording, and language, seven respondents (5% of the total sample) equivalent to 15 orphans from one public secondary school with similar characteristics with the target population which the study

proposes to focus on were interviewed. Expert advice was sought from the supervisors and other lecturers in the Department of Psychology and Educational foundation, who examined the items of the instruments and gave professional advice that, found a basis for the modification and improvement of the questionnaires. The test re-test method was used to ascertain the reliability of the questionnaires indicate a reliability co-efficient of (0.891). Thereafter, a correlation was determined between meta-cognitive learning skills and academic achievement. Hypotheses were tested at the 5% level of significance ($p=0.05$). For example, when the p-value obtained was less than 0.05, the null hypothesis was rejected but when the p-value obtained was greater than 0.05 then the null hypothesis was accepted.

3. Findings & Discussion

The study established the relationship between meta-cognitive learning skills and academic achievement among orphaned secondary school children in Bondo Sub-county. To address this research objective, two questionnaires were carefully developed; the first one was to measure the level of meta-cognitive learning skills and the second questionnaire was investigating the elements of self-regulation factors among the orphaned secondary school children. In addressing the first objective of the study, the

null hypothesis “There is no statistically significant relationship between meta-cognitive skills and academic achievement among orphaned secondary school children in Bondo Sub-county” was tested. To do this a correlation analysis was conducted. The set scores on the meta-cognitive skills were used as the independent variable while scores from self-regulation factors was used as the explanatory variable (dependant variable).

On the level of meta-cognitive learning skills among the orphaned secondary school children, the researcher designed a questionnaire to collect views of the respondents on the same. The items in the questionnaire were related to facts/perceptions which were linked to actions influenced by meta-cognitive learning skills that were deemed to have bearing on self-regulation factors among the orphaned secondary school children. The students’ respondents were presented with statements that had meta-cognitive learning skills connotations and were Likert-scaled. The respondents were to choose from 5-point score; Strongly Agree (SA), Agree (A), Disagree (D), Not Sure (NS) and Strongly Disagree (SD). The respondents were asked to score on each statement based on their perception on the statement in regard to meta-cognitive learning skills. The researcher computed percentage frequencies of the responses from the students and was tabulated as shown in Table 1 while the results of the correlation are presented in table 2.

Table 1. Percentage responses on items of meta-cognitive learning skills

| ITEMS (N=286) | Strongly Agree | Agree | Disagree | Not Sure | Strongly Disagree |
|--|----------------|-----------|----------|----------|-------------------|
| Though I have no parents, I believe that I am a child of worth | 183(64.0) | 53(18.5) | 19(6.6) | 16(5.6) | 15(5.2) |
| There are things which I feel proud of | 115(40.2) | 117(40.9) | 20(7.0) | 22(7.7) | 12(4.2) |
| Lack of parental love and protection forced me to think that I am a worthless child | 44(15.4) | 48(16.8) | 76(26.6) | 19(6.6) | 99(34.6) |
| Being orphaned does not create a problem from doing things just like non-orphaned children | 146(51.0) | 74(25.9) | 28(9.8) | 21(7.3) | 17(5.9) |
| I feel I do not have much to be proud of | 24(8.4) | 54(18.9) | 91(31.8) | 39(13.6) | 78(27.3) |
| Without feeling ashamed of my parents' death, I take a positive attitude towards myself | 151(52.8) | 86(30.1) | 18(6.3) | 17(5.9) | 14(4.9) |
| On the whole, I am satisfied with myself | 89(31.1) | 83(29.0) | 36(12.6) | 39(13.6) | 39(13.6) |
| I wish I could have great self-esteem | 122(42.7) | 94(32.9) | 27(9.4) | 29(10.1) | 14(4.9) |
| As a result of my parents' death, I sometimes feel that I am good for nothing | 26(9.1) | 44(15.4) | 73(25.5) | 30(10.5) | 113(39.5) |
| I sometimes think that I am bad | 18(6.3) | 42(14.6) | 77(26.9) | 41(14.3) | 108(37.8) |
| I have good problem solving skills | 64(22.4) | 97(33.9) | 34(11.9) | 69(24.1) | 22(7.7) |
| I do rehearsal daily to improve on my performance | 171(59.8) | 87(30.4) | 10(3.5) | 9(3.1) | 9(3.1) |
| I have good learning styles | 93(32.5) | 109(38.1) | 25(8.7) | 49(17.1) | 10(3.5) |

Table 2. Correlations

| | | Academic performance of orphaned children | Meta-cognitive learning skills |
|---|---------------------|---|--------------------------------|
| Academic performance of orphaned children | Pearson Correlation | 1 | .957** |
| | Sig. (2-tailed) | | .000 |
| | N | 286 | 286 |
| Meta-cognitive learning skills | Pearson Correlation | .957** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 286 | 286 |

From the findings in table 1, although 64.0% of the students' respondents held the opinion that though they have no parents, they believe that they are children of worth as well as 18.5% who agreed on the same note. Nevertheless, 6.6% of the students' respondents disagreed and this was supported by 5.2% of their colleagues who even strongly disagreed. This implies that they believe on the fact that having no parents exposes them to children of no worth. Despite of these findings, still 5.6% of the students' respondents were not sure whether those who have no parents still believe that they are children of worth. In addition, the findings also show that 40.2% strongly agreed that there are things which they feel proud of followed by 40.9% who agreed. Unfortunately 11.2% of the students' respondents were on the contrary opinion by indicating that there are no things which they feel proud of but 7.7% of the students' respondents were not sure whether there are things which they feel proud of. The findings concurs to the findings in a study by Aura, (2013) who established that lack of parents do not make orphans feels children of no worth and instead are proud just as other children who are not orphans.

It emerged from the findings of the study that reasonable number of the students 32.2% agreed that lack of parental love and protection forced them to think that they are a worthless children. However, 34.6% of the students strongly disagreed followed by 26.6% meaning that lack of parental love and protection do not force them to think that they are worthless children despite of 6.6% of them being not sure. This finding agrees to the findings by Chatzipanteli and Digelidis, (2011) who found out that parent and educators have the obligation to pay more attention to the important role of meta-cognitive strategies which can improve student's performance and reasoning. Furthermore, the findings are in agreement to the words echoed by Muola (2010) who emphasized that parents need to be aware of the importance of their role in their children's academic achievement motivation so that they can provide the necessary facilities at home.

Moreover, the findings established that 9.1% of the students strongly agreed that as a result of their parents' death, they sometimes feel that they are good for nothing followed by 15.4% of the students who also agreed. On the other hand, 10.5% of the students were undecided while 39.5% of the

students strongly disagreed that as a result of their parents' death, they sometimes feel that they are good for nothing followed by 25.5% who also disagreed. This means that they do not feel that they are good for nothing due to their parents' death. Furthermore, the results showed that only 6.3% of the students strongly agreed that they sometimes think that they are bad followed by 14.6% who also agreed on the same item. On the contrary, the majority (64.7%) of the respondents disagreed that they sometimes think that they are bad meaning that they are good despite of 14.3% of the students not decided whether they sometimes think that they are bad. The findings concur to the findings in a study by Aura, (2013) whose sentiments indicates that orphans are not bad especially those that have lost their parents. In addition, the results agreed to the findings by Maqsud (2013), who revealed that both meta-cognitive ability and nonverbal reasoning ability have significant positive association with mathematics and English achievement scores. The findings of the two experiments suggested that some intervention programs to teach meta-cognitive strategies to students, who lack such skills, may improve their academic attainment.

On the other hand, only 59.8% of the students strongly agreed that they do rehearsal daily to improve on their performance followed by 30.4% who also agreed. However, 6.6% of the students disagreed that they do rehearsal daily to improve on their performance implying that they do not do rehearsal daily to improve on their performance leaving 3.1% of the students to be undecided. The findings also showed that 38.1% of the students agreed to have good learning styles supported by 32.5% of the students who strongly agreed that have good learning styles. However, 8.7% of the students disagreed that they have good learning styles followed by 3.5% of the students who also strongly disagreed that they have good learning styles while 17.1% of the students were not sure whether they have good learning styles. This implies that 12.2% of the students do not have good learning styles according to the findings. The findings are in agreement to the sentiments echoed by Coutinho, (2007), who established that metacognition refers to awareness and monitoring of one's thoughts and task performance which is involved in learning such as making plans for learning, good learning styles, daily rehearsal, using appropriate skills and strategies to solve a problem, making estimates of performance, and calibrating the extent

of learning. Furthermore, the findings are similar to those of Robertson (2012) whose results from the first model suggest that higher cognitive abilities and the use of rehearsal (the surface learning strategy) each play a unique role in predicting academic performance. On the other hands, the findings are on contrast to the words stated by Robertson (2012) who stated that various components of learning style and strategy do not predict academic performance at all. Learning styles along with the deep and metacognitive learning strategies were found to have no meaningful relation with academic performance. Cognitive abilities and rehearsal however were key predictors of performance. Furthermore, the findings agreed to Rooyen, (2012) whose results clearly indicated that training in meta-cognitive strategies coincided with an increase in academic performance.

To address the first objective of the study, the null hypothesis “There is no statistically significant relationship between meta-cognitive skills and academic achievement among orphaned secondary school children in Bondo Sub-county.” was tested. To do this a correlation analysis was conducted. The set scores on the Meta-cognitive learning skills were used as the independent variable while scores from academic performance of orphaned children was used as the explanatory variable (dependant variable). The results of the correlation are presented in table 2.

The Pearson Product-Moment correlation coefficient ($r = .957$) computed indicated that there was high positive correlation between meta-cognitive learning skills and academic achievement among orphaned secondary school children in Bondo Sub-county. The analysis revealed highly significant ($p < 0.05$) positive relationship between meta-cognitive learning skills and academic achievement, with high levels of meta-cognitive learning skills associated with most of the students’ respondents holding the opinion that though they have no parents; they believe that they are children of worth. In addition, students agreed that there are things which they feel proud of followed. Majority of the respondents believed that being orphaned does not create a problem from doing things just like non-orphaned children. Most of the students agreed that without feeling ashamed of their parents' death, they take a positive attitude towards themselves (SSPS output is shown in Table 2). Hence it is acceptable to conclude that there were significant positive association between meta-cognitive learning skills and academic achievement. The findings were in agreement to the words echoed by Chatzipanteli and Digelidis, (2011) who reported that performance scores of the final trial were higher compared to the scores of the first trial. The results imply that meta-cognitive prompting has significant influence on students’ performance. In addition, the findings concurs to the findings by Eluemuno and Azuka (2013) who revealed a positive relationship between meta-cognitive skills and academic performance such that developing meta-cognitive skills of a student will lead to the improvement of his/her academic performance in English Language.

Moreover, the findings are supported by those findings by Coutinho, (2007) where results of the correlational study revealed that mastery and performance goals correlated weakly together ($r = .24, p = .01$) suggesting that mastery and performance goals are somewhat independent of each other and students high in mastery goals are not likely to be high or low in performance goals. Mastery goals correlated strongly with metacognition ($r = .73, p = .01$) compared to performance goals ($r = .26, p = .01$). This indicates that as students with good metacognition also have strong mastery goals whereas students with performance goals may or may not have good metacognition. In addition, the findings are consistent to the findings by Aura, (2013) whose ANOVA analysis displayed statistically significant differences in meta-cognition in form of meta-cognitive prompts between groups. In addition, the findings are in agreement to the findings in a study by Abdi (2012) whose results of research showed that there is a correlation between the meta-cognitive beliefs and test anxiety with the academic achievement. Furthermore, the findings concur to the words stated by Huang and Fernandes (2011) that there is significant correlations between meta-cognitive awareness, exam scores and grade point average (GPA). Moreover, the findings are in agreement to Huang and Fernandes (2011) who affirmed that the overall meta-cognition accounted for 36.2% of the variance in academic achievement, suggesting that students with higher levels of meta-cognition reap the rewards of academic achievement. Finally, the findings are inconsistent to Ongowo & Hungi (2014) who established a statistically significant difference between the Nakuru group and the Siaya group in favor of Nakuru with regard to self-efficacy in Biology learning. They also scored higher in most of the variables. There were no statistically significant gender differences in motivational beliefs and self-regulation in Biology learning.

Meta-cognition plays a critical role in successful learning it is therefore important to study meta-cognitive activity and development to determine how orphans can be taught to better apply their cognitive resources through meta-cognitive control. These meta-cognitive learning skills in one way or the other affects performance of the orphans in schools. One of the head teachers said that, *when it comes to meta-cognitive skills, most orphans can demonstrate meta-cognitive skills hence perform very well in their exams* (Head Teacher 2). This implies that orphans who demonstrate meta-cognitive learning skills perform better than those orphans without meta-cognitive learning skills. Moreover, another head teacher said that, *most of the orphans feels strong and happy to the extent that they work hard in class work hence perform well in their exams* (Head Teacher 1). This means that orphans are very joyous with any task assigned to them hence in one way or the other motivates them to succeed academically. The findings concurs to the findings in a study by Aura, (2013) who established that lack of parents do not make orphans feels children of no worth and instead are proud just as other children who are not orphans.

Furthermore, one of the head teachers was certain that, orphans without parental love appear to be weak and even anti social and in most cases are lonely despite the fact that parental love is very important in the lives of orphans since they will also feel a sense of belonging (Head Teacher 3). This means that lack of parental love among the orphans affects orphans mentally and this will affect their performance in schools. In addition, one of the head teachers confirmed that, some orphans feel lonely due to lack of parental love and protection and therefore have poor meta-cognitive learning skills which have affected their learning ability (Head Teacher 5). One of the head teachers also narrated that some orphans feel that being orphaned creates a problem from doing things and therefore feels lonely and in most cases not able to compete with their counterparts (Head Teacher 4). This implies that those orphans who do not have their parents feel as if missing their parents makes them to get problems in everything they do in life. On the other hand one of the head teachers was not sure why most orphans feel as if they lose important things in life, in fact he said that, I do not know why orphans in most cases feel like they are losing very important aspect in life to the extent that some of them feel worthless in life and this has resulted to most orphans not able to think for themselves and in most cases not knowledgeable in academic matters (Head Teacher 7). This implies that orphans live in denial to accept that they are orphans and this in one way or the other affects their performance in schools. This finding agrees to the findings by Chatzipanteli and Digelidis, (2011) who found out that parent and educators have the obligation to pay more attention to the important role of meta-cognitive strategies which can improve student's performance and reasoning. Furthermore, the findings are in agreement to the words echoed by Muola (2010) who emphasized that parents need to be aware of the importance of their role in their children's academic achievement motivation so that they can provide the necessary facilities at home. Moreover, the findings concur to the study by Mucherah and Stahl (2014) where girls reported being more motivated by compliance and social reasons and as a result girls showed higher reading achievement.

The qualitative findings through one of the head teachers found out that some orphans are very positive with life in fact they have positive attitude in everything they do despite of their parents' death and they are able to show up motivational factors and interests that improves their academic achievement (Head Teacher 6). This was consistent to the words echoed by another head teacher who said that, *orphans have good meta-cognitive learning skills that makes them to perform better in their studies as compared to orphans without interests in education* (Head Teacher 2). This implies that orphans who have positive attitude in life will automatically perform well in schools since they have goals and objectives to achieve in life. The findings are in agreement to the words echoed by Abdi (2012) who

concluded that the meta-cognitive beliefs play the role in the students' test anxiety and academic achievement. This is because; his study indicated that being orphaned does not create a problem from doing things just like other children.

Furthermore, the findings are in agreement to the words echoed by Robertson (2012) who found out that in most cases, orphans are not satisfied with their life and instead felt lonely in most cases. This is because majority of the orphans felt of low self esteem hence poor social skills and this has reduced their social networks. *Finally, I can affirm that majority of the orphans have poor learning and problem solving skills that has affected some of them and this happens because majority of the orphans have opinion that they are like bad omen in the society and this has caused them not to be willing to learn from their counterparts. This has affected their performance in schools now that they do not even consult their teachers and friends due to the fear of unknown* (Head Teacher 2). All these implies that orphans have challenges including loneliness, low self esteem, hopelessness and 'bad' that affects their academic performance in schools. These findings are consistent to the findings by Vrieling, Bastiaens & Stijnen (2012) who indicated that student teachers' use of meta-cognitive skills increased significantly in learning environments with increased SRL opportunities. Student teachers' motivation for learning was also enhanced, although to a lesser degree. Finally, significant correlations were found between the meta-cognitive study process construct and the motivational constructs measured.

4. Conclusions

In conclusion, there is relationship between meta-cognitive learning skills and academic achievement among orphaned secondary school children in Bondo Sub-county. Due to this, while some students' respondents do believe that though they have no parents; they believe that they are children of worth others do not. On the other hand, there are things which some orphans feel proud of while others are not. Reasonable number of the students agreed that lack of parental love and protection forced them to think that they are worthless children. In addition, majority of the respondents believed that being orphaned does not create a problem from doing things just like non-orphaned children. Schools should equip orphans with lifelong survival skills such as social, moral, cognitive and emotional skills to enable the orphans to develop proper meta-cognitive skills in the community following discharge from the mother institution. This can be achieved through training of psychologist who would in turn assist the orphans in developing meta-cognitive skills. This is because the study has established that secondary school orphans do not have proper meta-cognitive skills that would increase their academic achievement.

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