Academic performance and satisfaction with homework completion among college students

Héfer Bembenutty [a,*], Marie C. White [b]

[a] Queens College of the City University of New York, United States
[b] Nyack College, New York, United States

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ABSTRACT

Under the umbrella of the social cognitive theory of self-regulation of learning, we examined the association between homework practices of college students, motivation and self-regulation of learning, and final course grades. Data from one hundred thirty-three college students, who completed measures of help-seeking, self-efficacy, intrinsic motivation, and homework logs suggested that the relationship between students' beliefs and homework practices are associated with their academic performance, reported use of adaptive help-seeking, and motivational beliefs. Results support the use of homework logs, and the consideration of students' self-efficacy, intrinsic motivation, and use of help-seeking strategies related to homework completion to help explain the development of self-directed learners.

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Homework is defined as academic tasks assigned by teachers to be done by students outside of the instructional time (Cooper, Steenbergen-Hu, & Dent, 2012). The value, importance, and positive effects of homework on learning and achievement are largely presumed, particularly at the middle, high school, and college levels (Cooper, 2007). However, only recently have the benefits of homework been directly linked to self-regulation of learning (Corno, 1993; Zimmerman & Kitsantas, 2005). *Self-regulation of learning* refers to learners setting goals, maintaining motivation, and controlling their actions, beliefs, and behaviors in order to attain important academic goals (Zimmerman, 2008). Homework is associated with students' self-efficacy for learning and intrinsic motivation (Kitsantas & Zimmerman, 2009). A meta-analysis examining the association between self-regulation and homework found strong support for this association (Dent, Cooper, & Koenka, 2012).

From social cognitive theory, Kitsantas and Zimmerman (2009) suggested that homework is a process that prompts students to engage in self-initiated, independent, self-directed learning, and promotes self-regulation of learning. Zimmerman, Bonner, and Kovach (1996) proposed that a comprehensive self-regulation approach to homework should focus on specific controllable processes and beliefs experienced by students while they are doing homework. Zimmerman et al. (1996) developed a learning academy model that frames homework and learning as a self-regulated learning process. However, researchers have not

yet examined college students' homework practices, motivation for homework, and help seeking tendencies during a semester using homework logs. Under the umbrella of the social cognitive theory of self-regulation of learning, the present study examined the association between motivational beliefs, help seeking strategies, and homework practices and whether these variables separately accounted for unique variance on final course grade and satisfaction with homework completion.

1. Homework, self-regulation, and help seeking

Research on self-regulation of homework completion has grown during the last three decades (Zimmerman & Kitsantas, 2005). This research integrates cognitive, motivational, and behavioral components to understand students' successful homework completion. Homework can be assigned to promote self-regulation of learning and increase motivational beliefs such as self-efficacy and intrinsic motivation (Zimmerman et al., 1996). *Self-efficacy* refers to one's beliefs in his or her ability to perform at a designated level (Bandura, 1997). For example, Kitsantas and Zimmerman (2009) studied the influence of homework practices on college students' academic grades. They found that self-efficacy has a direct effect on academic performance and it mediates the effect of homework on academic performance (Kitsantas & Zimmerman, 2009).

Intrinsic motivation is also associated with homework and self-regulation. *Intrinsic motivation* refers to learners' engagement and enjoyment in a task for the sake of learning. In a study with at-risk college students, Bembenutty (2010) found that intrinsic motivation was related to students' academic performance and homework completion. He

* Corresponding author at: Queens College of the City University of New York Powdermaker Hall 150-P 65-30 Kissena Blvd. Flushing, NY 11367 United States. Tel.: +1 646 338 4130.
   E-mail address: bembenuttyseys@yahoo.com (H. Bembenutty).

found that intrinsic motivation had an indirect effect on homework completion mediated by self-regulation and delay of gratification, and on academic performance mediated by homework completion.

Help seeking is an important self-regulatory strategy associated with academic achievement (Karabenick & Newman, 2006; White, 2011). However, homework has not yet been investigated in relation to learners' use of help seeking strategies when they are required to complete a challenging course project. Students seek help for different purposes. *Adaptive help seeking* occurs when the help requested is limited to the amount and type required for the student to solve the problem independently. In contrast, *executive help seeking* occurs when the requested help intends for someone else to solve the problem. *Avoidance of help seeking* focuses on situations when a student requires, but chooses to not seek help.

The use of homework logs to track students' homework practices has been shown to be an effective self-monitoring tool in educational settings. Zimmerman et al. (1996) developed a theoretical model of homework self-regulation implementing homework logs. Their model suggests four cyclical phases of homework completion: a) self-evaluation and monitoring, b) goal setting and strategy planning, c) strategy implementation and monitoring, and d) strategic outcome monitoring.

Cooper, Horn, and Strahan (2005) successfully tested the Zimmerman et al. (1996) homework model with high school English teachers who attempted to promote high levels of self-regulation for homework completion. They found that the students of these teachers demonstrated greater awareness of self-regulation and goal setting than initially indicated. The students used a homework log to record data related to homework completion. Bembenutty (2010) assessed associations between college students' homework activities reported in a homework log and their use of self-regulatory learning strategies, self-efficacy, and intrinsic motivation. He found that students who were self-efficacious and intrinsically interested were more likely to adopt a proactive self-regulatory approach to their homework tasks.

1.1. Purpose of the study

This study had two objectives: 1) to examine the association between motivational beliefs, use of the self-regulatory strategy of help seeking, and individual homework practices and 2) to examine whether motivational beliefs, help seeking strategies, and homework practices separately accounted for unique variance on final course grade and satisfaction with homework completion (Bembenutty, 2010).

2. Method

2.1. Participants

Participants in the study were one hundred thirty-three (fifty males, eighty-three females) college students drawn from a small private college in urban New York. After providing informed consent, students were given a series of assessments to complete in the classroom. The assessments targeted specific course and homework beliefs in relation to the course where they completed the assessments rather than general beliefs about learning. Over a span of six weeks, students completed homework logs designed by Zimmerman et al. (1996) in which they reported their goals, distractions, and satisfaction with homework completion.

2.2. Measures

2.2.1. Help seeking strategies

This assessment contains three scales representing students' help seeking from an instructor: 1) *adaptive* ("When I ask for help with assignments pertaining to this class project, I prefer to be given hints or clues rather than the answer;" $M = 6.12, SD = 1.31; \alpha = .84$), 2) *executive* ("When I ask the instructor for help with assignments pertaining to this class project, I prefer the instructor do the work for me rather than explain to me how to do it;" $M = 2.21, SD = 1.65; \alpha = .92$, and 3) *avoidance*

("I don't ask for help with assignments for this class project, even when the material is too hard to complete on my own;" $M = 2.59, SD = 1.70; \alpha = .99$) (White, 2011; see Appendix A). Responses to the scales were coded (1 = "Not like me at all" to 8 = "Very much like me").

2.2.2. Self-efficacy for learning

The Self-efficacy for Learning Scale (Bembenutty, 2010) was used to assess self-efficacy for learning (e.g., "I am sure that I can learn all the material in this class"; Appendix A). Responses to the 4-item scale were coded (1 = strongly disagree, 7 = strongly agree); $M = 5.51, SD = 1.49; \alpha = .92$.

2.2.3. Intrinsic motivation

The Intrinsic Motivation Scale (Bembenutty, 2010) was used to assess intrinsic motivation for learning (e.g., "I enjoy studying the material of this class"; Appendix A). Responses to the 5-item scale were coded (1 = strongly disagree, 7 = strongly agree); $M = 4.41, SD = 1.54; \alpha = .86$.

2.2.4. Final course grade

Final course grades were obtained from the instructors.

2.2.5. Homework logs

A homework log was distributed to students weekly for four weeks. Students reported their homework activities pertaining to a specific course-related long-term project. Consecutively for four weeks during the semester, the students reported their homework goals, whether there were distractions, and their level of satisfaction with the completed homework (see Appendix B).

2.3. Procedure

After obtaining approval by the Institutional Review Board (IRB), toward the middle of the semester, participants were invited to participate in the study during their regular class time. Participants completed homework logs during four consecutive weeks, where they reported their homework activities related to a major project they were doing for their class. Instructors gave consent for the researchers to conduct the study; they did not monitor the students' use or submission of the logs or provide guidance and feedback to the students related to the logs. This process was important given that the researchers wanted to examine the students' independent and self-directed homework practices apart from teacher supervision. Every week, one researcher returned to the classroom to collect the logs. On the average, students returned four of the six logs. When logs were not turned in or were not correctly filled out, students were encouraged to bring them back correctly filled out.

2.4. Data analysis

The proportion of variability in the final course grade that occurred between classes was assessed. The intraclass correlation coefficient (ICC) is 30%. However, given the sample size, a multilevel analysis was not warranted. The proportion of variability between courses on students' satisfaction with homework completion was assessed. Only 7% of the total degree of satisfaction with homework performance variability occurred between courses. Thus, a multilevel analysis was not necessary. The non-significant Wald (= 1.09, $p = .274$) supported that decision.

3. Results

3.1. Objective 1: intercorrelations between the variables

Consistent with the social cognitive theory of self-regulation, the final course grade was positively related to self-efficacy ($r = .40$), and intrinsic motivation ($r = .20$). Final course grade was positively related to adaptive help seeking ($r = .21$), but it was inversely related to avoidance help seeking ($r = -.18$). The importance of assessing students' homework

experience across time is indicated by the positive associations between final course grade and level of satisfaction with homework performance ($r = .33$), setting specific homework goals ($r = .32$), and avoiding distraction while completing homework assignments ($r = .25$), but, it was not significantly related to setting general homework goals. Evidently, the types of goals, whether they are general or specific, have a differential association with their academic performance (see Table 1).

Self-efficacy was positively related to intrinsic motivation ($r = .59$), adaptive help seeking ($r = .23$), and setting specific homework goals ($r = .18$). Intrinsic motivation for doing homework was positively related with adaptive help seeking ($r = .21$). Adaptive help seeking was inversely related to executive help seeking ($r = -.26$) and to avoidance help seeking ($r = -.21$). With regard to homework practices, students seek help for different reasons that are associated with different academic outcomes.

3.2. Objective 2: regression analyses

Regression analyses were conducted to examine whether motivational beliefs, use of self-regulatory and help seeking strategies, and homework practices separately accounted for unique variance in the final course grade and level of homework satisfaction (see Table 2 and Table 3). In the initial analyses, we controlled for gender and ethnicity, however, these variables were excluded in later analyses because they did not make a significant contribution. The final models excluded the interaction terms. The multicollinearity assessment revealed that the variation inflation factor (VIF) was lower than 10 with a Condition Index lower than 21. The residuals were plotted in a histogram and a Q–Q plot, which indicated that there was no severe violation of normality. Independent variables were centered.

In the first regression model, final course grade was the dependent variable. In step 1, self-efficacy ($\beta = .43$) was a significant predictor and intrinsic motivation ($\beta = -.05$) was not a significant predictor; together they accounted for a significant portion of the variance in final course grade ($R^2 = 16$), $F(2,128) = 12.47$, $p < .001$. In other words, students who reported having a high level of self-efficacy beliefs for completing the homework assignments obtained high grades in the course. In step 2, students' help seeking tendencies were added, which accounted for 21% of the total variance with only a partial increase in the accounted variance, $F(3,125) = 2.55$, $p < .058$. Self-efficacy continues to be a positive and significant predictor ($\beta = .42$), but avoidance help seeking was a significant negative predictor ($\beta = -.23$). In step 3, students' homework practices were added. Self-efficacy continued to be a positive and significant predictor while avoidance help seeking also continued to be a significant and negative predictor. Setting general ($\beta = .16$) and specific ($\beta = .24$) homework goals and avoiding distraction during homework ($\beta = .19$) were significant and positive

predictors of final course grade; these variables accounted for 33% of the total variance, which was a significant increase in the variance accounted for, $F(3,122) = 6.85$, $p < .001$.

In the second regression model, satisfaction with homework completion was the dependent variable. In step 1, self-efficacy ($\beta = .25$) and intrinsic motivation ($\beta = -.24$) together accounted for a significant portion of the variance in final course grade ($R^2 = .05$), $F(2,127) = 3.41$, $p < .036$. Self-efficacy was a positive predictor while intrinsic motivation was a negative predictor. In step 2, students' help seeking strategies were added, which accounted for 8% of the total variance with a non-significant increase in the accounted variance, $F(3,124) = 1.67$, $p < .176$. However, self-efficacy continued to be a positive predictor, intrinsic motivation continued to be a negative predictor, and adaptive help seeking was a significant and positive predictor ($\beta = .29$). In step 3, students' homework practices were added. Self-efficacy was not a significant predictor while intrinsic motivation continued to be a significant and negative predictor ($\beta = -.16$). Setting general ($\beta = .26$) and specific ($\beta = .45$) homework goals and avoiding distractions during homework ($\beta = .36$) were significant and positive predictors of homework satisfaction. Step 3 accounted for 47% of the total variance, which was a significant increase in the variance accounted for, $F(3,121) = 29.19$, $p < .001$.

Given that intrinsic motivation was not a significant predictor of final grade, and multicolinearty, severe violation of normality or assumptions were not a concern, a mediation analysis was conducted to examine the effect of intrinsic motivation on final grade, with self-efficacy as a mediator. Following Baron and Kenny (1986), three hypotheses were tested using regression analysis. First, intrinsic motivation had a significant direct effect on final grade, which accounted for 4% of the variance. Second, intrinsic motivation had a significant effect on self-efficacy, which accounted for 34% of the variance. Third, after controlling for self-efficacy, intrinsic motivation did not have a significant effect on final grade, $R^2 = 15$ (see Table 4 and Fig. 1). These findings show that self-efficacy mediates the association between intrinsic motivation and final grade, which was confirmed by the Sobel test (Sobel test = 3.78, $p < .001$). However, intrinsic motivation did not significantly mediate the association between self-efficacy and final grade (Sobel test = $-.47$, $p = 636$).

4. Discussion

The social cognitive theory of self-regulation of learning guided this study. These findings are consistent with previous studies and with theoretical accounts related to self-regulation of learning and homework performance (Zimmerman et al., 1996) and emphasize the importance of assessing students' practices and beliefs pertaining to their homework completion. Satisfaction with homework was positively associated with academic performance, homework practices, and adaptive

Table 1
Means, standard deviations, Cronbach alphas, and intercorrelations for scores on academic performance, motivation beliefs, homework practice, and help seeking strategies among college students.

Variables	1	2	3	4	5	6	7	8	9	10
1. Final course grade	1									
2. Homework satisfaction	.33**	1								
3. Self-efficacy	.40**	.11	1							
4. Intrinsic motivation	.20*	−.09	.59**	1						
5. Adaptive help seeking	.21*	.19*	.23**	.21*	1					
6. Executive help seeking	−.10	−.03	−.06	−.10	−.26**	1				
7. Avoid help seeking	−.18*	−.06	.03	.00	−.21*	.64**	1			
8. General study goal	.16	.27**	.04	−.00	.14	−.13	−.01	1		
9. Specific study goal	.32**	.45**	.18*	.01	.06	−.05	−.10	−.07	1	
10. Avoid distractions	.25**	.40**	.13	.05	.11	.11	.05	.07	.01	1
Mean	3.05	70.47	5.51	4.41	6.12	2.21	2.59	.66	1.75	1.83
Standard deviation	1.18	35.36	1.49	1.54	1.31	1.65	1.70	1.04	1.48	1.45
Cronbach alpha	–	–	.92	.86	.84	.91	.96	–	–	–

Final course grade ranges from 1 (F) to 12 (A+).
* $p < .05$.
** $p < .01$.

Table 2
Hierarchical regression analysis summary of motivation, help seeking, and homework activities predicting final course grade.

	B	SEB	β	t	p
Step 1 (R = .40; R² = .16; ΔR² = .15)					
Self-efficacy	.34	.07	.43	4.34	.001
Intrinsic motivation	−.04	.07	−.05	−.56	.576
Step 2 (R = .46; R² = .21; ΔR² = .18)					
Self-efficacy	.33	.07	.42	4.32	.001
Intrinsic motivation	−.04	.07	−.06	−.64	.520
Adaptive help seeking	.08	.07	.09	1.14	.256
Executive help seeking	.07	.07	.09	.93	.354
Avoid help seeking	−.16	.07	−.23	−2.23	.027
Step 3 (R = .57; R² = .33; ΔR² = .28)					
Self-efficacy	.26	.07	.33	3.46	.001
Intrinsic motivation	−.01	.07	−.01	−.11	.907
Adaptive help seeking	.04	.07	.04	.58	.562
Executive help seeking	.05	.07	.07	.71	.475
Avoid help seeking	−.14	.06	−.20	−2.08	.039
General study goal	.18	.08	.16	2.16	.033
Specific study goal	.19	.06	.24	3.16	.002
Avoid distractions	.15	.06	.19	2.53	.012

help seeking tendencies, indicating that when self-regulatory processes are integrated as part of the homework endeavors, learners report positive learning experiences and motivation.

Consistent with the social cognitive theory, self-efficacy, intrinsic motivation, and adaptive help seeking were positively associated with final course grade while help seeking avoidance was negatively associated with the final course grade (Karabenick & Newman, 2006; White, 2011). These findings support Zimmerman et al.'s (1996) academy model, which suggests that the use of homework logs serves as an important educational tool that educators can use to enhance their students' self-regulation of learning and motivation. Consideration of contextual and individual factors related to homework completion, self-regulation of learning, and motivation help to explain the development of self-directed learners. Educators from elementary grades through college should be encouraged to use homework logs in order to provide feedback to students about the factors that interfere with their academic performance. Future studies should examine the effectives of feedback on students' homework performance.

These results support the contention that there is a positive relationship between the amount of homework students do and their

Table 3
Hierarchical regression analysis summary of motivation, help seeking, and homework activities predicting homework satisfaction.

	B	SEB	β	t	p
Step 1 (R = .22; R² = .05; ΔR² = .03)					
Self-efficacy	6.02	2.52	.25	2.38	.018
Intrinsic motivation	−5.49	2.43	−.24	−2.26	.026
Step 2 (R = .29; R² = .08; ΔR² = .05)					
Self-efficacy	5.33	2.53	.22	2.10	.037
Intrinsic motivation	−5.95	2.43	−.26	−2.44	.016
Adaptive help seeking	5.18	2.46	.29	2.10	.037
Executive help seeking	.84	2.44	.04	.34	.729
Avoid help seeking	−1.07	2.34	−.05	−.45	.648
Step 3 (R = .68; R² = .47; ΔR² = .43)					
Self-efficacy	1.07	2.01	.04	.53	.594
Intrinsic motivation	−3.77	1.89	−.16	−1.99	.048
Adaptive help seeking	2.78	1.92	.10	1.44	.151
Executive help seeking	−.38	1.92	−.01	−.19	.843
Avoid help seeking	.09	1.82	.01	.05	.959
General study goal	9.02	2.29	.26	3.92	.001
Specific study goal	10.97	1.63	.45	6.70	.001
Avoid distractions	8.93	1.65	.36	5.41	.001

Table 4
Summary of the hierarchical regression results on mediation effects following Baron and Kenny (1986).

Step	DV	IV	B	SE B	β	t	p	R	R²	ΔR²
1	Final course grade	Intrinsic motivation	.15	.06	.20	2.34	.020	.20	.04	.03
2	Self-efficacy	Intrinsic motivation	.56	.06	.58	8.27	.001	.58	.34	.33
3	Final course grade	Intrinsic motivation	−.03	.07	−.04	−.48	.632	.39	.15	.14
		Self-efficacy	.33	.07	.42	4.27	.001			

DV = dependent variable; IV = independent variable.

achievement outcomes. Cooper, Robinson, and Patall (2006) observe that "doing homework causes improved academic achievement" (p. 48). These findings also support the important role that the self-regulatory strategy of help seeking plays in students' academic performance and homework practices. The process of effective homework completion starts with setting goals and strategic planning, implementation and monitoring of strategies, monitoring outcomes, and ends with self-evaluation. Research is needed on instructional interventions that target self-regulatory processes and motivational beliefs to improve the academic success of students using tools such as homework logs.

One limitation of this study is its relatively small sample size. Furthermore, this study is correlational and causation cannot be inferred. Another limitation is that the study did not assess characteristics of the instructors, course content differences, students' perception of the course and the instructors, or academic level of the students. It is important to observe that course grades are not necessary indicators of successful individual learning. In the present study, performance in the class is reported rather than successful learning. Future research should examine the role of these variables on students' homework beliefs and practices at the course level.

Of significant importance is that self-efficacy mediated the association between intrinsic motivation and final grade. This finding supports Bandura's (1997) notion that self-efficacy is an important individual difference that explains human agency and direction while pursuing important goals. This finding supports the conception that those students who engage in self-regulation and are self-efficacious are often the ones who are independent learners, self-motivated, self-regulated learners. Future studies should examine homework practices concurrently with classroom observations and interviews of the students and instructors over a longer-period.

In conclusion, these results indicate that relationships between students' beliefs and homework practices are associated with their motivational beliefs, use of the self-regulatory strategy of help seeking, and homework practices. Some students are able to seek help in order to master the tasks at hand while others often seek help to have the work done for them, or, will do homework with minimal effort and commitment.
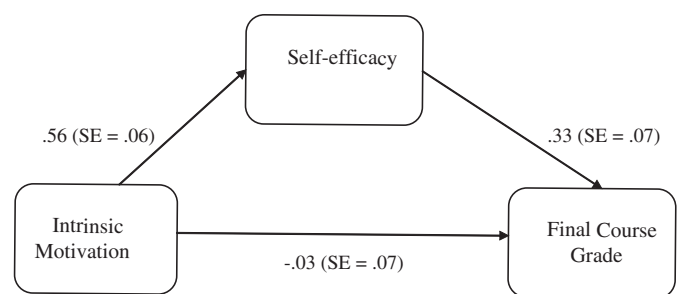

Fig. 1. Test of the mediation model: raw unstandardized coefficients (B) and their standard errors (SE). Sobel test of the mediation effect (Sobel test = 3.78, p<.001). Self-efficacy significantly mediates the effect of intrinsic motivation on final course grade, but intrinsic motivation does not significantly mediates the effect of self-efficacy on final course grade (Sobel test = −.47, p = 636).

Appendix A

Sample Items Assessing Help Seeking and Motivation

Help-Seeking
Response format consisted of an 8-point Likert scale (White, 2011)
(1 = *"Not like me at all"* to 8 = "Very much like me")

Adaptive Help-Seeking (5 items).
"When I ask for help with assignments pertaining to this class project, I prefer to be given hints or clues rather than the answer."

Executive Help-Seeking (5 items)
"When I ask the instructor for help with assignments pertaining to this class project, I prefer the instructor do the work for me rather than explain to me how to do it."

Avoidance Help-Seeking (9 items)
"I don't ask for help with assignments for this class project, even when the material is too hard to complete on my own."

Self-efficacy and Intrinsic Motivation
Response format consisted of a 7-point Likert scale (Bembenutty, 2010)
1 = *"Strongly disagree"* and 7 = *"Strongly agree"*)

Self-efficacy (4-item scale)
1. "I am sure that I can learn all the material for this course."
2. "I am sure I can obtain a high score in this course."

Intrinsic Interest (5-item scale)
1. "I enjoy studying for this course more than for other subject."
2. "I find studying for this course very motivating."

Appendix B

Study Log

Student name _____   Class #: _____   Today's Date _____   Study Week:_____

1. Homework or self-initiated studying (e.g., reading)	2. Assignment or study goal	3. Estimation of Time Needed	4. Time Started	5. Time Completed	6. Where?	7. With whom it was completed?	8. Distractions	9. Assignment/ goal completion (from 1 to 100)

How to Fill the Study Log Form

In this Study Form, you should log all of the study activities you are doing out of the classroom for this class. By study activities we mean any homework assigned by the instructor and/or any studying you choose to do for this class.
- In column 1, write whether the activity time was homework or a self-initiated study time (e.g., reading, research the internet, study group).
- In column 2, write the specific material/task that you studied (for example, reading pages 20 to 30 from the textbook). Be very specific about what you will study.
- In column 3, write how much time you estimate studying will require.
- In column 4, write the time you started studying.
- In column 5, write the time you finished studying.
- In column 6, write where you studied (for example, your bedroom, in the library, in the train).
- In column 7, write with whom you study (indicate whether you studied alone, with a classmate, with a tutor, or with a friend, a parent).
- In column 7, describe the presence of any distraction during the study time (for example, your friend called you by telephone).
- In column 9, choose a number between 1 and 100 to indicate how well you have completed the assignment; 1 will indicate that you completed the assignment very badly and 100 will indicate that you completed the assignment very well.

If in one day you did not do any assignment or studying for this class, indicate that in the rows by writing: "None" or "I did not study".

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