Relationship between emotional motivation and academic performance in second language learning

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Article Info

ABSTRACT

This article presents the results of a research study on the role that affective motivation plays in learning a second language (L2). There were 171 American university students of Spain, German, Italy, and Japan as a second language participated in the study. This was an ex post facto, cross-sectional, and correlational quantitative study that informs us of which is the type of motivation most beneficial for learners and considers variables such as age, gender, academic performance, and the intention to continue studying a second language. An online questionnaire based on the Dörnyei motivational model was administered. The results show that the variables ideal self and "projection of intended effort" of the learners are positively and significantly related to the academic performance of the students and to the intention of enrollment in future foreign language classes. At the opposite extreme, the deontic self or ought-to-self does not correlate significantly with any of the rest of the variables considered. Regarding the cross-sectional analysis of age and gender, no significant differences were found in gender. However, there was a negative and significant correlation between age and academic performance. Furthermore, there was positive and significant correlation between age and projected effort.

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1. INTRODUCTION

Learning a second language is a task for which arduous doses of motivation, determination, and the ability to cope with expected and unexpected difficulties are needed. When a student enrolls in a foreign language course, they are not always aware of the challenges or difficulties that learning poses, nor do they know in advance how they will learn that second language. Thus, we see that while some students meet their goals and learn the foreign language, others do not go beyond the basic level and are discouraged in their first steps. For this reason the affective and motivational variables that underlie the learning of a second language (L2, from now on) have been the subject of research since the nineties of the 20th century [1]–[4]. This line of research starts from an attempt to overcome the cognition-emotion division into two different blocks that relegated emotions to the background [1], [5]. Today we know that the emotional dimension is fundamental [6], and that for this reason, we must delve into the role that affective variables play in the acquisition of a second language. By affective variables we refer to the emotions that condition learning, among which we can highlight the desire to communicate [7], [8], anxiety in language [9], or motivation, both intrinsic and external [1]–[3], [8], [10]–[15].

One of the problems we find when learning second languages is the great amount of time and effort that must be invested in order to have a functional level (B1-C1) [16] in the target language. In the field of second language acquisition (SLA), there are many studies that describe the factors influencing the successful learner [17], [18] and the characteristics of an effective teacher [19], [20]. There is a broad [11]–[15] consensus on the important role that motivation plays in the process of learning a second language [1]–[3], [21]. As Dörnyei and Chan [22] point out, having a positive and clear vision of the objective to be achieved helps to maintain this cycle of motivation despite the effort that has to be made. In this way, the relationship between academic performance and motivation is essential to develop a positive learning style with significant results, that is, lasting ones, and to prevent students from falling off the hook and not continuing with L2 [4]–[6], [8], [23]–[28].

To avoid school failure in L2, numerous studies point to the need to create a positive future self-image, as well as having effective expectations and a healthy image [4], [15], [22], [29]. One of the most recent models in the field of linguistic motivation is that of Dörnyei [12], [13] which identifies three components: i) The ideal self; ii) The deontic self; and iii) The learning experience. Dörnyei describes the ideal self as a specific facet of L2 learning that is very important in maintaining motivation during the learning process. It represents the ideal image that the learner has of themselves as a member of the target language community in the future, alluding to their own desire to belong to that community. In contrast, the deontic self is conceptualized in terms of social responsibilities and pressures. That is, it has to do with what is necessary socially, academically, or professionally and, therefore, an externally imposed obligation.

Based on previous studies [13], [30], it seems that the ideal self-variable plays a more relevant role than the deontic or obligation dimension. However, it is important to delve into the relationship between both variables and the role they play in academic effort and performance. If we follow the notion of the ideal self from Dörnyei, one of the main problems we encounter in language teaching-learning is that students do not have a clear notion of their ideal self or their deontic self, regardless of the methodology in the class [4], [15]. In other words, they have not done that visualization exercise that athlete do when faced with a difficult challenge. Having this visualization, as well as a clear objective are elements that facilitate the maintenance of motivation. In addition, they are vital to learn the steps necessary to get an L2 and overcome the difficulties.

According to previous researches [15], [30], this self-image must be elaborate, specific, and vivid to be effective and must be accompanied by strategies that enhance the energy generated by self-image. The identification of these strategies must be conscious on the part of teachers and students. Dörnyei and Kubanyiova [30] proposed a motivational strategy to promote self-image in L2 that cost six elements: i) Create the vision; ii) Strengthen the vision; iii) Corroborate the vision; iv) Transform vision into action; v) Keep the vision alive; and vi) Counter the vision.

Ultimately, this visualization of personal goals and projections keeps the motivation cycle alive. Hence, the opposite also happens, on many occasions a bad learning experience can break this circle [3]. On the other hand, the projected effort of a person refers to the image of their effort in the future, which influences in the investment of time and intended determination that the L2 student will invest, allowing them to move forward in moments of crisis, weakness or less motivation.

A correlational empirical study has been carried out on the effect of motivation on academic performance in the foreign language class, analyzing the role played by both the ideal self and the deontic self in academic performance. The ultimate purpose of this study is to examine how the dimensions "effort", ideal self, and deontic self covary with affective motivation and academic performance in L2. The hypothesis that a clear and solid ideal self will improve academic performance and the intention to continue studying the language underlies this study, but it is also important to see how the rest of the intervening variables evaluated are interrelated. Other demographic data, age, and gender are analyzed here to see if there are other variables that are statistically significantly correlated with the results obtained. Specifically, this study has as research objectives: i) To evaluate the existing correlations between "effort", "ideal self" and "deontic self" in L2 learners as the main dimensions of their motivation; ii) To evaluate the existing relationship of the three dimensions of motivation, academic performance and future academic plans related to L2; and iii) To evaluate the role that the attributive variables gender and age could play in this whole process.

In addition to the pioneering work by Dörnyei and Chan [22], there are not many studies that relate these two variables to academic performance, age, and gender. Other variables such as proficiency or accent have been studied, but more studies are needed related to a specific measurement instrument such as an academic grade that shed light on this issue [31], [32]. This research gap is tackled in this study.

2. RESEARCH METHOD

2.1. Research design

A quantitative, correlational, and cross-sectional study is carried out using eight quantitative and ordinal variables through Pearson's r and comparisons of means using student's t for the gender variable. The results are described using the frequency distribution with respect to the attributive variables and through the arithmetic mean and standard deviation for the quantitative variables. It is an ex post facto analysis, which analyzes the existence of associations leaving causality aside. For statistical analysis, a significance level of 95% (α=05) is used.

2.2. Participants

The population under study taken as a reference are American college L2 students. The sampling carried out was by means of conglomerates. Due to accessibility for the research purpose, the selected sample was taken from a US Liberal Arts College from different language courses taught in the 2018-2019 academic year. The teachers distributed the survey to their students. The requirement to participate in the study was to be a second language student in the present and in the last two semesters. The levels of the courses that the participants were taking varied from the first semester of university to the fourth semester. A proficiency test was not carried out and, therefore, the level of second language of the students cannot be established within the scale of the American Council on the Teaching of Foreign Languages (ACTFL), nor of the Common European Framework of Reference for Languages. All participants reported having taken at least two semesters of the studied language prior to participating in the study. The final sample consisted of 171 participants (121 women and 50 men) with a mean age of 20.47 years. Table 1 details the distribution of the sample according to the different attributive variables (nominal and ordinal) considered in the study.

All the participants agreed to the research after accepting their informed written consent. They were also having their anonymity guaranteed and all their rights protected, as established by the Helsinki Declaration of Ethical Principles and Good Research Practices [33]. No risk was identified with participation in the study, which was approved and supervised by the Guilford College Ethics Committee (IRB).

Table 1. Distribution of frequencies and percentages according to the different nominal and ordinal variables considered in the study

		Frequency	Percentage
Gender	Man	50	29.2%
	Woman	121	70.8%
Age	Under the age of 20	73	42.7%
	Over the age of 20	98	57.3%
L2 studied	English	1	0.6%
	German	17	9.9%
	German and Spanish	1	0.6%
	German, Spanish and Japanese simultaneously	1	0.6%
	Italian	1	0.6%
	Japanese	4	2.3%
	Spanish	144	84.2%
	Spanish and Japanese	1	0.6%
	Spanish in high school	1	0.6%
Last grade in L2	F	2	1.2%
	D	4	2.3%
	C	8	4.7%
	B	43	25.1%
	A	114	66.7%
Plans to continue studying L2 in the future	No	39	22.8%
	Yes, it is within my plans.	62	36.3%
	Yes, I am already or I am planning a little continuation	29	17%
	Yes, I am already planning studies with great depth	41	24%
	Total	171	100%

2.3. Variables evaluated and data collection instrument

Eight variables were part of this study: i) Ideal self: Quantitative variable that is measured through 10 items on a 5-level Likert scale. Defined as how learners envision themselves as L2 users; ii) Deontic self: Quantitative variable that is measured through 10 items on a 5-level Likert scale. Defined as the extent to

which students are aware of external pressures related to language learning; iii) Projected effort: Quantitative variable that is measured through 10 items on a 5-level Likert scale. It is defined as the amount of effort that learners are willing to invest in learning a second language; iv) Gender: Dichotomous nominal attributive variable with two levels: Male and female; v) Age: Discrete quantitative variable consisting of the age in years of the participant; vi) L2 studied: Nominal variable. It is defined as the L2 (s) studied by each study participant; vii) Last grade obtained in L2: Five-level ordinal variable, from F, worst grade, to A, best grade. It is defined as the last grade in the L2 studies of the study participants; and viii) Plans to continue studying L2 in the future: Four-level ordinal variable, from 'No' to 'Yes, I am already, or I plan to study the language in great depth'. It is defined as the last grade in the L2 of the study participants.

The evaluation instrument used was the Dörnyei selves survey questionnaire, included in Nagle [6], adapted from Dörnyei to measure the three variables studied (deontic self, ideal self, and projected effort) as components of motivation of L2 students. It is included in Appendix A. The object of study in his case was the development of the phonetics of second language students, but in this study, it was adapted to measure academic performance, measured by the grade they got in the last class of the language studied. It is a questionnaire with 30 items on a five-level Likert scale (10 for each variable evaluated). In addition, three questions related to academic performance in a second language were included at the end in which the participants reported their grades in the last semester prior to the study and if they had plans to continue taking language courses in the future. The instrument used had excellent reliability in this study, measured through Cronbach's Alpha (α=923).

The questionnaire was distributed through Google Forms. The reason for carrying out this questionnaire with Likert scales was because of its effectiveness in terms of time and amount of data that can be obtained from different parts of the world, since the authors were in different countries, and it was more efficient to distribute the survey online to reach more subjects. The structure of the questionnaire was taken from the one used by Nagle and is divided into three aspects of motivation, the ideal self, the deontic self, and effort [6].

3. RESULTS

In the following section we will present our findings in the following order: i) Descriptive results shown in Table 2; ii) Correlations between variables, shown in Table 3; and iii) Interaction between the variable gender and the rest of the variables, shown in Table 4. The first set of results are purely descriptive, and the results shown in Table 3 answer two of the research objectives established in the introduction: i) To evaluate the existing correlations between "effort", "ideal self" and "deontic self" in L2 learners as the main dimensions of their motivation; ii) To evaluate the existing relationship of the three dimensions of motivation, academic performance and future academic plans related to L2. Results shown in Table 4 answer the final research objective of this paper; and iii) To evaluate the role that the attributive variables gender and age could play in this whole process. First, in relation to the descriptive results, Table 2 shows the arithmetic means and standard deviations obtained in the different dimensions of motivation, age, and grades obtained in the last L2 assessment, converting grades from F to A on numerical grades from 1 to 5.

Table 2. Typical means and deviations according to the variables involved in the study

	Frequency	Percentage
Age	20.47	4.65
Projected effort	3.78	.84
Ideal self	3.63	1.04
Deontic self	2.01	.8
Last grade in L2	4.53	.85

Table 2 clearly shows how the participant's profile corresponds to a mean of 20-year-old student, with a mostly A grade and with a projected effort and ideal self visibly higher than their deontic self. To this description of the sample, we should add what is already known through the frequency distribution shown in Table 1. That is, it is mostly female (70.8%), a student of Spanish (84.2%) and with plans to continue studying L2 (78.2%). Regarding the correlational analysis of the results, these are carried out using the quantitative variables of the study (ideal self, deontic self, effort, and age) and the numerical conversion of the ordinal variables (Academic performance and Future Plans in the L2). Table 3 shows the correlations using Pearson's r and reflecting when statistical significance occurs.

Table 3. Contingency table (Chi square/somers' D)

	Ideal self	Deontic self	Effort	Age	Makes. acad.	Fut. plans.
Ideal self	-	.148	.721**	.142	.226**	.596**
Deontic self	.148	-	.100	-.022	-.073	.027
Effort	.721**	.100	-	.165*	.174*	.506**
Age	.142	-.022	.165*	-	-.248**	.142
Academic performance	.226**	-.073	.174*	-.248**	-	.204**
Future L2 plans	.596**	.027	.506**	.142	.204**	-

*Correlation is significant with a level of 0.05; **Correlation is significant with a level of 0.01

The first remarkable result when analyzing the correlations shown in Table 3 is that it is clearly observed how the 'deontic self' variable does not correlate significantly with any of the other variables considered, which seems to indicate that its score is guided by different factors than the rest of variables, being independent of these. Another notable result at the opposite extreme is the high direct and significant correlations between ideal self, effort, academic performance and L2 future plans, which seems to indicate just the opposite of that of deontic self, that is, they are strongly associated variables, and therefore, better grades are associated with higher plans to continue studies in L2 and higher scores in the motivational variables ideal self and effort. Finally, it is noteworthy, in relation to the age variable, how there is an inversely significant correlation with academic performance the older the age, the worse the L2 grades and a direct and significant correlation with effort, which is understandable. To finish with the inferential statistical analyzes, Table 4 shows the results obtained when comparing the difference of means with the variable gender and the rest of the variables, using the student's t test for independent samples. As shown in Table 4, none of the mean comparisons is significant, which indicates that Gender is not a relevant factor in the study, since it has no statistically significant relationship with any of the factors evaluated in this research

Table 4. Comparison of means using student's t-test for independent samples considering the gender variable

Variable	t	Significance
Ideal self	-1.094	.275
Deontic self	-1.764	.080
Effort	-.819	.414
Age	-.602	.548
Academic performance	-1.654	.100
Future L2 plans	-1.874	.063

4.   DISCUSSION

Next, we are going to analyze the results based on the objectives that we set. When evaluating the correlations between "effort", "ideal-self" and "deontic self" in L2 learners as the main dimensions of their motivation, the results obtained have shown us that the categories of ideal self and projected effort are the strongest in this study. A remarkable result is that the mean within the Likert scale of projected effort (3.78) was greater than that of the ideal self (3.63) and the most significant and highest relationship that we found in our study was the one between the ideal self and the projected effort ($t=721$, $n=171$, $p\geq01$). This result has repercussions for future studies, namely, it would be advisable to continue analyzing the relationship between projected effort and learning experience because the Dörnyei model pays a lot of attention to the ideal self, but the literature ignores the impact of the learning experience.

However, a recent work by Dörnyei [3] postulates the learning experience as the strongest predictor in the persistence of language study and learning success. We believe that it is important to establish a relationship between past (experience) and future (effort) to create a new dimension of motivation that correlates with the other two variables (ideal self and deontic self). Another study that corroborates our result is that of Feng and Papi [24] showing that perseverance of effort predicts intensity and persistence of motivation. In their study, the element most similar to the ideal self, which they call the second language self or the other self, proved to be a positive predictor of the intensity and perseverance of the learners while the deontic self was a negative predictor. They also confirmed that perseverance of effort and future self-form an extraordinarily strong motivational force. Furthermore, the most recent studies carried out in China highlight the importance of projected effort as an indicator of motivation.

The ideal self and projected effort consistently outperform the deontic self as predictors of learning motivation. For example, in an article by You and Dörnyei [34], for Chinese students the desire, investing time and energy in language learning seems to be associated primarily with the evaluation of the learning process. In other words, they pay attention to both past and future experience to stay motivated. In conclusion, and to close this goal of our study, when looking at our results, one of the data aspects that needs

more research is the exploration and relationship of the projected effort with the learning experience since they are directly related, one retrospectively and the other with future projection. Our results are consistent with the previous literatures [24], [31], [34]–[37].

In our research we also evaluate the existing relationship of the three dimensions of motivation studied with academic performance and future plans related to L2. We have obtained results that confirm previous research, even though there are not many studies that analyze this variable. One of the problems that we find is that the language that has been studied to analyze this motivational model is English, and it is not until recently that it has begun to be applied to other languages such as Spanish, Chinese, and Japanese. The result can vary academically depending on the language, since the difficulty can vary and the motivation to learn one or the other language can be different.

In a comparative study of the sociocultural model of self-determination and the ideal self-motivational system [38], it was found that the ideal self and the learning experience have a positive effect on effort and, therefore, on its linguistic competence. One similarity of our work to the previous study is that the ideal-self and the learning experience are predictors of effort and competence, but not the deontic self. There are also studies that investigate the concept of achievement in L2 [32], [39], [40].

If we compare their results with ours, some similarities and differences can be seen. For example, Li and Zhang explored the motivation of Tibetan students to learn Chinese as a second language and its effect on their Chinese learning performance. In their study they showed that the three main components of the ideal self-system could predict the expected learning effort of Tibetan students. They also found that the ideal self and the deontic self are positive and negative predictors respectively of their L2 learning achievement, in this case Chinese. Moskovsky *et al.* [32] revealed that the ideal self-system was a good predictor of the expected learning efforts of Saudi English learners. However, their study also established that the ideal self-system did not consistently correlate with L2 achievement as measured by a reading and writing test. Finally, the study by Subekti [40] did not find a significant relationship between the ideal self and the academic performance of Indonesian students of English.

As in our study, the deontic self was negatively correlated with academic achievement. The only uniform conclusions that can be drawn is that the ideal self has a positive effect on academic achievement, although not always positive and significant, and that in the same way, and more consistently, the deontic self has a negative effect on grades obtained. We have not found any research examining the desire to continue studying a language in relation to motivation, but our results show us that ideal self, effort, and academic performance are positively related to this element of our study.

We now proceed to evaluate the role that the attributive variables gender and age could play in motivation. There are few studies that focus on age differences in motivation in second language learning. Among them, Kormos and Csizér [37] found age-related differences in some aspects of motivation. For example, in their study, university English students showed the highest averages in their international posture category, a term coined by Yashima [41] to capture the general attitude towards the international community and foreign language learning. On the other hand, other adults and high school students scored lower means. Kormos and Csizér [42] also found significant differences in another element of motivation, effort. College students and adult language learners showed significantly higher scores on the motivated learning behavior scale; specifically, they were willing to invest more effort in language learning and were more persistent compared to younger students. In their study, the ideal self was the strongest predictor of motivated behavior for adult students compared to high school and college students. They also analyzed cultural interest, defined as attitudes towards L2 cultural artifacts (movies, Tv shows, magazines, pop music).

Cultural interest was present as a significant predictor of motivation in the high school sample, but not in college or high school students. Our study is perfectly consistent with these results, with the difference that in our study we did not include the same components of motivation. However, as in his research, we found a correlation between effort and ideal self and differences in age. Our sample also found significant differences between age and effort, although low, (r=16, n=171, p=03). The older the subjects in our sample were, the more willing they were to invest effort.

On the other hand, Okuniewski [43] found relationships between age and gender with motivational attitudes. Older students and women had a more inclusive attitude than younger students, and men experienced more intense motivation. Parallels cannot be established with this study since we base our research on Dörnyei's model and this research is based on Gardner's model.

Regarding gender, our study does not show a significant relationship between gender and motivation. In a study that relates gender to the ideal self-motivational model, Akram and Ghani [44] examined a sample of 240 English learners in Pakistan and found no significant differences in motivation based on gender. In addition, their analysis did not find significant differences in their examined components between men and women: their parental stimulus, degree of instrumentality, anxiety in English class, ethnocentrism, cultural identity, need for achievement, interest in foreign languages and motivational intensity. Our results and those of this study by Akram and Ghani contradict previous results that showed

gender differences, but not in motivation, but in attitude towards language learning [45]. However, in the research by Dörnyei, Csizér, and Németh [45] mentioned the tendency of these differences to disappear due to globalization. Mori and Gobel [46] examined motivational gender differences in English class and found that women were more motivated to learn foreign languages than men. This study was based on Garnder's sociocultural model and not on Dörnyei, as was the aforementioned study by Okuniewski [43]. The two studies showed that there was a significant difference in integrability based on gender, women scored significantly higher on this dimension than men. Parallelly, Yang [47] only found gender differences of integrative and heritage-related motivation.

Some of the limitations of our study have to do with the balance of the size of each variable, for example, in gender, there were 70% more women than men. The language studied did not have comparable numbers either due to the availability of the informants. Furthermore, as mentioned, it would be interesting to have investigated the learning experience variable. Although we did not include this variable explicitly, the grades obtained in the previous semester are part of this experience and were positively related to the projected effort.

Our result is in line with previous study by Akram and Ghani [44]. However, more studies are needed to explore these differences in gender motivation. Currently there is a lot of literature that explores the two most studied models of motivation in language learning, the Gardner sociocultural model and the Dörnyei motivational system. However, it would be necessary to use a sociolinguistic approach to continue differentiating some of the demographic variables that affect the complex construct of motivation. An example of the way forward would be the stratified study carried out by You and Dörnyei [34].

5.   CONCLUSION

This study confirmed the positive effect of the ideal self and the correlation between effort and ideal self that occurs in the literature, these two aspects of motivation being the strongest compared to the deontic self. Regarding the sociolinguistic aspect of the study, there are studies that show age differences consistently with ours. However, in the variable of gender and age there are no definitive studies that show differences.

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APPENDIX A

Items related to intended effort:
1. I would like to take more Spanish courses at my university in the future
2. I would like to spend lots of time studying Spanish
3. If my teacher were to give the class an optional assignment, I would certainly volunteer to do it
4. I am prepared to expend a lot of effort learning Spanish
5. I would like to study Spanish even if I were not required to do so
6. I would like to concentrate on studying Spanish more than any other topic
7. If a Spanish course were offered somewhere else in the future, I would like to take it
8. I think that I am doing my best to learn Spanish
9. Compared to my classmates, I think I study Spanish relatively hard
10. I am working hard at learning Spanish.

Items related to the ideal L2 self:
1. I can imagine myself writing Spanish e-mails/letters fluently
2. The things I want to do in the future require me to use Spanish
3. I can imagine myself living abroad and using Spanish effectively for communicating with the locals
4. I can imagine myself as someone who is able to speak Spanish
5. I can imagine myself living abroad and having a discussion in Spanish
6. I can imagine myself speaking Spanish with international friends or colleagues
7. Whenever I think of my future career, I imagine myself using Spanish
8. I can imagine a situation where I am speaking Spanish with foreigners
9. I can imagine myself studying in a university where all my courses are taught in Spanish
10. I can imagine myself speaking Spanish as if I were a native speaker of Spanish.

Items related to the ought-to L2 self:
1. I have to study Spanish, because, if I do not, I think my parents will be disappointed with me
2. Studying Spanish is important to me in order to gain the approval of my peers/teachers/ family/boss
3. Studying Spanish is important to me because other people will respect me more if I have a knowledge of it
4. I study Spanish because close friends of mine think it is important
5. It will have a negative impact on my life if I don't learn Spanish
6. If I fail to learn Spanish, I'll be letting other people down
7. Learning Spanish is necessary because people surrounding me expect me to do so
8. My parents believe that I must study Spanish to be an educated person
9. Studying Spanish is important to me because an educated person is supposed to be able to speak Spanish
10. I consider learning Spanish important because the people I respect think that I should do it.

Note: Items were presented in random order to participants. Three orders were generated and counterbalanced across sessions. Instructions and an example of survey formatting are provided.

Instructions: On this survey, I would like you to tell me how much you agree or disagree with the following statements by simply circling a number from 1 to 6. Please do not leave out any items.
(1=Strongly disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly agree)
a. I would like to take more Spanish courses at my university in the future. 1 2 3 4 5
b. I would like to spend lots of time studying Spanish. 1 2 3 4 5

APPENDIX B: Open-ended questionnaire items
Please answer the following questions in as much detail as possible. Your responses will provide insight into students' beliefs concerning language learning.
1. Please comment on the motives you have to learn a second language.
2. What type of activities are more motivating to you in your class?
3. Please explain how you see yourself in a few years when you have learned the language? For example, how you will use the language, in which contexts? What is your ideal image?
4. What are some elements or factors that demotivate you from learning another language, not only the language you are learning now.
5. Why do you think you should learn the second language? What is the image you have of the ought-to-be self-regarding the use of the second language in the future?
6. What is your main goal in learning Spanish? How do you accomplish that goal?
Please discuss what you do to achieve the goal both inside and outside of class, if applicable.