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Understanding strategies in foreign language learning: Are integrative and intrinsic motives distinct predictors? ☆

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Abstract

This study examines the relation between the motivational structure and use of learning strategies of high school foreign language students. Students in 36 foreign language classrooms (French, German, Latin, and Spanish; first- through fifth-years) from a large Midwestern high school participated in the study (N=694). As predicted, correlation and multiple regression analyses confirmed the distinctiveness of "integrative motivation" in the prediction of learning strategies. While the intrinsic motivation factor was the best predictor of extracurricular learning activities, the integrative motivation was a better predictor of compensatory strategies and collaborative strategies, which may promote active language use. Findings will be discussed with respect to structural differences in motivation and learning behavior between foreign language learning and other subjects.

Keywords: Foreign language; Learning strategies; Motivation

1. Introduction

Over the past several decades, much research has been done on the cognitive processes that are involved in math and science learning, and how these processes are related to motivation and learning strategies (Pintrich, 2000; Pintrich & DeGroot, 1990). However, less is known about the structure and functional relations between motivational aspects and learning strategies in foreign language learning (FLL; Cohen, 1998). Although it is generally believed that the motivational structure is similar across domains, there is a growing body of empirical research that suggests a separate construct specific to FLL, referred to as an integrative motivation, which appears to be more than just a facet of intrinsic motivation (Gardner, Masgoret, Tennant, & Mihic, 2004; Gardner & Tremblay, 1994; Lamb, 2004). The purpose of this paper is to empirically explore the distinction between the intrinsic and integrative motivation by demonstrating the differential predictive validity of these motivations on students' reported use of learning strategies in FLL. We argue that the integrative motivation is a domain-specific motivational concept, which has arguably been overlooked in motivation research in general academic contexts.

1.1. Intrinsic motivation

Intrinsic motivation is defined as the "inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn" (Ryan & Deci, 2000). Self-determination theory asserts that humans have an innate need to feel autonomous, competent, and a sense of belongingness. The process of self-determination is intrinsically motivating, and this motivation is satisfied when a person is able to meet the three needs listed above. Much of the literature on intrinsic motivation focuses on the factors that help bring forth and sustain this tendency, assuming that once students are intrinsically motivated,

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adaptive learning outcomes will follow; however, limited research has been done on whether and how intrinsic motivation predict students' use of various learning strategies, and the effects of intrinsic motivation on other academic outcomes (Dörnyei, 2000; Oxford & Nyikos, 1989; Ryan & Connell, 1989). This is surprising given that theories of learning motivation emphasize that learning motivation is not a direct cause of academic achievement. It rather makes it more likely that a student invests time and effort in learning behavior which, in turn, improves the student's knowledge. However, not all learning activities are equally efficient and a high learning motivation can be expected to have a substantial impact on learning gains only if it leads a student to engage in efficient learning strategies.

Many motivational theorists have noted the similarities between intrinsic motivation and motivational constructs grounded in socio-cognitive theories. While drive theories such as SDT hold that motivation is mostly driven by non-conscious needs, socio-cognitive theories, such as goal theory are primarily concerned with the reasons to engage in academic behaviors as perceived by the students themselves (Kaplan, Middleton, Urdan & Midgley, 2002). Goal theory proposes that students may adopt two main goals in achievement settings, one of which is referred to as a mastery goal. Students who adopt a mastery goal focus on the development of competence and learning, relative to the task (Harackiewicz & Elliot, 1993; Pintrich, 2000; Pintrich, Roeser, & DeGroot, 1994). This closely resembles the definition of intrinsic motivation stated above, but does not necessarily imply a general "inherent tendency." Both concepts of intrinsic motivation and mastery goals emphasize students' motivation to extend their understanding and mastery of tasks.

1.2. Integrative motivation

For FLL, Gardner and his colleagues (Gardner, 1988; Gardner, Lalonde, & Pierson, 1983) have developed a conceptual model of motivation that distinguishes between "instrumental" motivation to learn a foreign language (such as using the general skill to get a better job) and "integrative" motivation, which reflects the student's aim to identify with the FL culture (such as being socially accepted by native speakers). Integrative motivation may also be considered instrumental in the sense that the foreign language learning will facilitate the person's immersion into the culture. Here, learning the foreign language is an integral component of the acculturation process (cf. Schumann, 1986), whereas with "instrumental" motivation to learn a language, the skill itself is not what is necessarily valued. For example, an individual with an instrumental motivation to learn a foreign language might do so only as a step towards earning a higher degree, which will help garner a larger salary.

Based on Gardner's socio-educational model, integrative motivation overlaps with the concept of intrinsic motivation. As Noels, Clement, and Pelletier (1999) have pointed out, intrinsic and integrative motivation both refer to "positive attitudes toward the learning situation and the learning process" (p. 31). However, they continue that "intrinsic motivation does not address attitudes towards the L2 [second language] community, and hence can be considered distinct from integration, or at least, from a subset of the constructs included in the integrative motive" (p. 31). These attitudes towards the L2 community might involve an interest in interacting with "target" language speakers as a means of becoming immersed in and identifying with a specific culture (Gardner & Tremblay, 1994). A person with a purely instrumental motivation might also be interested in interacting with native speakers, but primarily for the sake of improving the language skill considered helpful in order to reach a different goal (e.g., successful business). A person with a purely intrinsic motivation would want to interact with a native speaker because he enjoys the challenge of successfully communicating in a foreign language. In other words, unlike integrative motivation, instrumental and intrinsic motivations do not entail this aspect of cultural identification and acceptance by native speakers.

It is important to note that clear distinctions can be made when talking about "pure" examples, but in reality there are seldom cases where individuals fall into mutually exclusive categories. Particularly in learning situations, the three motivations are often positively correlated. Nevertheless, recent research shows that these motivations differ in their influence on learning outcomes. For example, Noels (2001) looked at the relation between an integrative orientation toward learning a foreign language and intrinsic/extrinsic motivation. In this study, 322 college students in first-year Spanish classes complete a questionnaire assessing intrinsic and extrinsic motivation for learning Spanish, feelings of autonomy and competence regarding language learning, integrative orientation, and perceptions of teachers' communication style. As would be predicted by the self-determination theory, results suggest that the more controlling students perceived their teacher to be, the less autonomous they felt therefore lowering their intrinsic motivation to learn Spanish. Although integrative orientation was related to intrinsic motivation, both constructs were independent predictors of effort and persistence, and while intrinsic motivation was a significant predictor of positive affect, an integrative orientation consistently predicted such outcomes as higher quality and quantity of interactions with the Latino community, as well as a higher level of identification with the Latino community. These findings clearly demonstrate that an integrative motivation orientation and intrinsic motivation are not necessarily equivalent, and that there is a need to examine them further as separate constructs.

Noels et al. (1999) also completed a study in which the varying degrees of extrinsic motivation (i.e., external regulation, introjected regulation, and identified regulation),[1] and intrinsic motivation were examined in terms of FLL for a group of 78 students participating in a six-week summer French immersion program. Again, in accordance with the self-determination theory, these researchers found that higher levels of

[1] Self Determination Theory (Ryan & Deci, 2000) distinguished three different forms of non-intrinsic motivation: extrinsic, i.e. due to external pressure ("I go to school because my parents want me to"), introjected, i.e. based on internalized reasons ("I feel guilty if I don't go to school"); identified, i.e. when the behavior is part of the person's self concept ("I go to school because it is really important to me").

intrinsic motivation were predicted by lower student perceptions of being controlled by the teacher. Also, students who were more intrinsically motivated exerted more effort and reported a higher intention to pursue the study of French. The results of both studies have clear implications for the importance of considering multiple motivational subtypes in this field.

1.3. Motivation and learning strategies

With regard to the proposed differences between intrinsic and integrative motivation, it may be helpful to consider the question of whether these two motivations differentially predict students' use of learning strategies. Taking another step back, it may be necessary to illustrate why this question is even important: Why do we care about which learning strategies students use? Research on teaching math, science, and literacy has investigated the role of self-regulated learning strategies in learning and achievement. Cognitive learning strategies include rehearsal, elaboration, and organization, while metacognition includes both the knowledge about cognition, and the control and regulation of one's cognitive processes (Garcia & Pintrich, 1994; Pintrich & DeGroot, 1990). Rehearsal strategies refer to those that involve repetition and rote memorization of material in order to keep new information in one's working memory for quick retrieval. Elaboration is defined as strategies that facilitate students to make connections between new material and things they already know, such as paraphrasing and summarizing. Organization involves arranging and coordinating new material in a manner that allows for easier retrieval of knowledge, such as outlining texts for main ideas, and using specific methods for mapping out important ideas. Metacognitive knowledge can be defined as having an awareness of strategies and task characteristics, or "knowing about thinking." Metacognitive strategies include students' monitoring of progress, regulating their own behaviors and cognitive processes, and planning.

Many researchers have suggested that the relation between motivation and academic performance may be mediated through students' use of these learning strategies. Within academic domains such as math, science, and psychology, the link between constructs related to motivation (e.g., achievement goals) and learning strategy use is well documented (e.g., Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Pintrich, 2000; Pintrich & Garcia, 1991; Pintrich, Smith, Garcia, & McKeachie, 1993; Ryan & Connell, 1989), as is the link between strategy use and academic performance (e.g., Elliot et al., 1999; Pintrich & DeGroot, 1990; Pintrich & Garcia, 1991; Pintrich et al., 1993).

Despite the face validity of learning strategies as relevant aspects of the learning process, their theoretical conceptualization and measurement are not without problems (Dörnyei, 2005). Some learning strategies are "metacognitive" in nature, i.e. referring to the reflection of the learner on his or her learning process and are hence considered beneficial for academic learning in general. Other aspects of learning behavior are specific to the learning task (e.g. language learning) and either do not apply to other learning contexts or are not considered conducive to the learning progress. As a consequence in educational psychology, the traditional learning strategy approach and the questionnaires based on it (e.g. the "Learning and Study Strategies Inventory—LASSI" by Weinstein, Schulte & Palmer, 2006) were gradually superseded by the broader concept of self-regulation which emphasizes the dynamics of the learning process and is less focused on general techniques and skills (see Boekaerts, Pintrich & Zeidner, 2000). In the research domain of FL-learning, the applied aspect dominated the development which led to the development of inventories that measure specific learning behaviors. The "Strategy Inventory for Language Learning" (SILL; Oxford, 1990) is the most widely used in empirical research with good psychometric properties and predictive validity of learning outcomes (Oxford & Crookall, 1989). As it is true for most learning strategies questionnaires, the validity of the SILL as a measure of actual learning behavior is limited to students' cognitive representation and self-observation (Dörnyei, 2005).

The mediation model is particularly relevant for FLL as it is primarily seen as a field of adult education where the learners are assumed to be more driven by learning efficacy than students in elementary and secondary school. With respect to the first part of this mediation model (motivation predicting learning strategy use) for example, Turner (1995) found that classroom context influenced students' motivation to learn how to read, which in turn influenced what learning strategies they employed. Students who were more involved in the reading tasks (whole language versus basal) of the classroom used more learning strategies (rehearsal, elaboration, and organizational tactics) than students who were not as involved. Similarly, Pintrich, (2000) reviewed studies that suggest that students who adopt mastery goals, are more likely to report using deeper learning strategies such as elaboration and organization, and are less likely to report using less effective, superficial strategies, such as rehearsal than students who are not mastery oriented. Finally, Ryan and Connell (1989) investigated the relation between elementary school students' motivation and various academic-related outcomes. They found that students from urban, suburban, and rural samples who reported intrinsic reasons for engaging in academic behaviors, were more likely to use positive coping strategies, and report higher effort and enjoyment on academic tasks than students who reported external, introjected, or identified reasons.

With respect to the second part of the mediation model (learning strategies predicting achievement), several studies have been conducted looking at how these various cognitive and metacognitive learning strategies relate to learning and performance. Pintrich and DeGroot (1990) examined the relation between self-regulated learning and classroom performance among seventh-grade students in science and English classes. They found that students' reported use of self-regulated learning strategies (i.e., comprehension monitoring, goal setting, planning, effort management, and persistence) was the best predictor of academic performance, regardless of the kind of task students were working on (in-class seatwork, quizzes/tests, or essays and reports). Elliot, McGregor, and Gable (1999) conducted a study among college undergraduates enrolled in an introductory psychology class. These researchers found that deeper-level strategies (as opposed to rehearsal or disorganization) were positively related to achievement at both an exam-specific and course-general level, and mediated the relation between particular achievement goals and performance.

These findings also suggest that the association between learning strategies and various positive academic outcomes may be generalizable across different student age groups.

Motivation researchers are generally in agreement that students' reports of their learning strategy use mediate the relation between such motivation constructs as achievement goals and achievement, as demonstrated by the aforementioned studies. However, while the research on motivation and learning strategies is relatively extensive for certain academic domains, the empirical base for language learning studies is rather sparse. Although theoretical proposals suggest that the structure of foreign language learning may be distinct from that of other academic subjects, clearly more research is needed in this area to address this topic. The current study therefore examines the structure of motivation and learning strategies used by high school students studying foreign languages.

Oxford and Nyikos (1989) found that among college-aged students in foreign language classes, those students who were taking the class by choice rather than because it was required of them, presumably exhibiting an intrinsic motivation for the language, were more likely than unmotivated students to report using strategies that required language practice in settings outside of the classroom (e.g., watching foreign language films, reading materials in the foreign language, initiating conversations in the foreign language, etc.). These extracurricular learning activities are known to be particularly relevant for the improvement of advanced foreign language skills (Oxford & Crookall, 1989).

There are multiple other strategies that are employed by students learning foreign languages, which closely parallel those used by students in other academic domains. Surveys and questionnaires are among the most comprehensive and efficient methods to ascertain which strategies are used, and the Strategy Inventory for Language Learning (SILL) is one of the most widely used instruments in this capacity (Hsiao & Oxford, 2002; Oxford, 1990). The SILL was designed as a means of determining which learning strategies students reported using, and how often they were using these strategies when learning a foreign language. Generally, the SILL measures six strategy components, including: (1) memory strategies, like rhyming, grouping, and imagery techniques; (2) cognitive strategies, such as summarizing, rehearsing, and analyzing; (3) compensation strategies, such as improvising and guessing when encountering an unknown word or phrase; (4) metacognitive strategies, like planning, goal setting, and monitoring progress; (5) affective strategies, such as self-encouragement, relaxation, and self-rewards; and (6) social strategies, like seeking out native speakers, asking questions, and becoming culturally aware (Oxford, 1996).

This empirical study attempts to further explore the suggested theoretical differences between the motivational structures of foreign language learning and other academic domains. It should be noted that we focus on students' motivation to learn a foreign language and its relation to what learning strategies they reportedly employ, and do not explore the mediating role of learning strategies on achievement. We hypothesize that:

1. integrative motivation will add explanatory power to what learning strategies students report using;
2. integrative motivation and intrinsic motivation will differentially predict various strategies;
3. integrative motivation will predict students' involvement in extracurricular learning activities such as reading books and initiating conversations in the foreign language.

Students who have an integrative motivation to learn a foreign language want to increase their quality and quantity of interactions with native speakers; therefore, we hypothesize that

4. these students are predicted to be more likely to use contextual compensatory strategies, such as using familiar words to make new sentences and trying to read in the foreign language without looking up unfamiliar words, as well as collaborative strategies, such as studying with other foreign language students. These strategies might increase students' capacity for fluency, and help them interact more naturally with native speakers.

2. Methods

2.1. Sample

Participants included 694 (59% female) students from 36 foreign language classrooms (French, German, Latin, and Spanish) in a large high school situated in an affluent Midwestern city. Students were enrolled in beginning (1st-year) through advanced (5th-year) levels of foreign language. The majority of students were in French (N=301) and Spanish (N=300) classes, and the remainder were in German (N=39) and Latin (N=54) classes. The average age of participants was 15.8 years.

2.2. Procedure

Consent forms were sent home with students several weeks before the questionnaires were administered. Only those students who returned signed consent forms were administered questionnaires on the day of data collection. Of the consent forms distributed to students, 63% were returned. Questionnaires were group-administered during the normal class schedule and took approximately 30 to 40 min to complete. Trained graduate research assistants read instructions aloud and remained in the classroom while participants completed the survey. Participants indicated the extent to which they felt each item was true for them on a 5-point Likert scale (1 = not at all true for me, 5 = very true for me).

2.3. Measures

The questionnaire administered to participants was adapted from a combination of several motivation and learning strategy scales and questions/scales developed for several empirical studies (Study Process Questionnaire (SPQ), Biggs, 1987; Dörnyei, 1990; Gardner, Tremblay, & Masgoret, 1997; Green, 1999; Noels, Pelletier, Clement & Vallerand, 2000; Strategy Inventory for Language Learning (SILL), Oxford, 1990; Motivated Strategies for Learning Questionnaire (MSLQ),

Pintrich et al., 1993; Schmidt, Boraie & Kassabgy, 1996). With the exception of the MSLQ and SPQ, all of the questionnaires and questions have been used specifically for studying language learning.

The MSLQ assesses students' reported motivation to learn in a particular class, and has primarily been used in domains such as math and science. Items were selected from the MSLQ that could be adapted to foreign language learning. This yielded at least two items from each subscale except for test anxiety: (1) intrinsic goal orientation, (2) extrinsic goal orientation, (3) task value, (4) control beliefs about learning, and (5) self-efficacy. Items from the other motivation questionnaires were used to supplement the five MSLQ subscales. The SPQ has also been used in other academic domains, and examines students' attitudes towards studying. As discussed earlier, the SILL assesses the extent to which students learning a language report employing various learning strategies. The SILL contains six subscales, including memory strategies, cognitive strategies, compensation strategies, metacognitive strategies, affective strategies, and social strategies.

All motivation and learning strategy measures in this study employ self-report methods. Some researchers question the validity and reliability of self-report measures. Study participants may systematically distort their responses to self-report questionnaires, due to either conscious (e.g., social desirability) or unconscious (e.g., misunderstanding of directions) causes. Despite these concerns, however, there is still a great need for self-report protocols in motivation research. Within educational psychology research, many motivation constructs rely on the students' perceptions of variables such as classroom environment (e.g., Church, Elliot, & Gable, 2001), teacher support of questioning (e.g., Karabenick & Sharma, 1994), and ability (e.g., Elliott & Dweck, 1988). When examining the influence of such constructs on student motivation and achievement, it is arguably only the students' *perception* that matters, and not necessarily objective "reality." For example, if a teacher assigns a worksheet that may be objectively rated as reasonably easy and straightforward by grade-level standards, but a student perceives the task to be extremely difficult, it is this perception that may prove detrimental to the student's motivation and/or subsequent performance.

Table 1
Learning strategy items, factor loadings, and reliability coefficients

	Items	Factor loadings
Extracurricular learning activities (α=.82)	• I read for pleasure in < language >.	.73
	• I attend and participate in out-of-class events where <language> is spoken.	.70
	• I watch TV shows or movies or listen to the radio in <language>.	.69
	• I try to think in <language>.	.68
	• I write personal notes, messages, or letter or reports in <language>.	.67
	• I initiate conversations in the new language.	.63
Cognitive learning strategies (α=.72)	• I say or write new expressions repeatedly to practice them.	.65
	• I say or write new expressions in <language> repeatedly to practice them.	.63
	• I revise what I write in <language> to improve my writing.	.49
	• I use flashcards with the new word on one side and the definition or other information on the other.	.44
	• I remember where the new word is located on the page, or where I first saw or heard it.	.43
	• I read a story or dialogue several times until I can understand it.	.43
	• I visualize the spelling of a new word in my mind.	.42
Analytic learning strategies (α=.81)	• I try to find the meaning of a word by dividing the word into parts that I understand.	.70
	• I always try to notice the similarities and differences between <language> and English.	.67
	• I look for similarities and contrasts between <language> and English.	.65
	• When I learn a new word in <language>, I try to relate it to other <language> words I know.	.61
	• I learn from my mistakes in using <language> by trying to understand the reasons for them.	.53
	• I find the meaning of a word by dividing the word into parts which I understand.	.52
Contextual compensatory strategies (α=.69)	• When I cannot think of the correct expression to say or write, I find a different way to express the idea.	.63
	• I use familiar words in different combinations to make new sentences.	.54
	• If I do not understand, I ask the speaker to slow down, repeat, or clarify what was said.	.54
	• I read without looking up every unfamiliar word.	.53
	• I try to relax whenever I feel anxious about using the new language.	.49
	• When I do not understand something in something I am reading, I try to guess its meaning from the context.	.47
Collaboration strategies (α=.68)	• I work with other language learners to practice, review, or share information.	.62
	• I try to work with other students from this class to complete the course assignments.	.60
	• I have a regular language learning partner.	.59
	• I ask other people to verify that I have understood or said something correctly.	.57
	• I ask the person to tell me the right word if I cannot think of it in a <language> conversation.	.50
	• I ask other people to correct my pronunciation.	.41
Environmental optimization strategies (α=.59)	• I usually study in a place where I can concentrate on my coursework.	.75
	• I have a regular place set aside for studying.	.74
	• I arrange my schedule to make sure that I keep up with my <language> class.	.40

Not only are self-report measures useful in assessing students' perceptions of various constructs, but they are also extremely valuable in examining constructs that are difficult to measure using other methods. Teachers and parents may not be able to accurately report on students' motivation, and it is nearly impossible to observe what learning strategies students employ. For these reasons, while some may question the validity and reliability of self-report measures, they still play a very important role in the study of motivation.

3. Scale analyses

Exploratory factor analyses using principal component analysis followed by varimax rotation were conducted on the motivation items in our questionnaire, yielding an eight-factor solution. The structure of the MSLQ was generally replicated, with additional factors that are specific to foreign language learning (see Cortina, Smith-Darden, Fiori, & Rhee, under review). The highest loading items for each of the eight factors were retained to form the following motivation subscales: (1) integrative motivation (4 items, $\alpha = .82$, e.g., "Studying Spanish can be important to me because it will allow me to meet and converse with more and varied people"); (2) intrinsic motivation (4 items, $\alpha = .75$, e.g., "Learning French is a hobby for me"); (3) self-efficacy (4 items, $\alpha = .79$, e.g., "I expect to do well in this class"); (4) mastery orientation (3 items, $\alpha = .70$, e.g., "In a class like this, I prefer course material that really challenges me so I can learn new things"); (5) performance orientation (3 items, $\alpha = .67$, e.g., "If I can, I want to get better grades in this class than most of the other students"); (6) external regulation (4 items, $\alpha = .66$, e.g., "The main reason I am taking this class is because my parents want me to"); (7) internal control (3 items, $\alpha = .71$, e.g., "If I don't understand the course material, it is because I didn't try hard enough"); and (8) effort (3 items, $\alpha = .34$, e.g., "I can honestly say that I really put my best effort into trying to learn Latin").

The original SILL instrument consists of 80 items assessing students' reported use of learning strategies. Due to time and space limitations on our survey, students reported on their use of learning strategies with a subset of items from the SILL (Oxford, 1990). Items were selected based on their factor loadings reported by Oxford (1996). Based on the theoretical model, a six-factor varimax solution was adopted. These factors correspond to the following strategies: (1) extracurricular learning activities; (2) cognitive learning strategies; (3) analytic learning strategies; (4) compensatory strategies; (5) collaboration strategies; and (6) environmental optimization strategies. Table 1 displays the scale items, factor loadings, and reliability coefficients for the learning strategy scales used in the current study.

Although Oxford's (1990) SILL also consists of six subscales, the factors that emerge from our analysis partially replicate these subscales. For example, Oxford's (1990) cognitive strategy scale mostly mapped onto our cognitive strategy scale; however, other items from Oxford's cognitive strategy subscale were categorized as analytic or extracurricular strategies in our analysis. Similarly, Oxford's compensation strategy subscale closely parallels the compensatory strategy scale in our questionnaire. Nevertheless, some items from Oxford's affective strategy scale ("I try to relax whenever I feel afraid of using English") and social strategy scale ("If I do not understand something in English, I ask the other person to slow down or say it again") loaded on our compensatory strategy scale. Even though the factor structure did not exactly correspond with that of Oxford's (1990), we used our six learning strategy scales in subsequent analyses, because they were conceptually sound and reliable (alpha range = .59 to .82).

Table 2
Pearson correlations between grade and self report scales uncorrected and corrected for attenuation due to measurement error ($N = 662$)

		Grade	
		R	*R (corrected)*
Motivation	Integrative	.135***	0.18
	Intrinsic	.151***	0.18
	Self-efficacy	.609***	0.69
	Mastery goals	.285***	0.34
	Performance goals	.229***	0.28
	External regulation	.139***	−0.17
	Internal control	.072	0.09
	Effort	.036	0.05
Learning strategies	Extracurricular	.066	0.07
	Cognitive	.187***	0.22
	Analytic	.167***	0.19
	Compensatory	.262***	0.31
	Collaboration	.036	0.04
	Environmental control	.195***	0.25

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Both the motivational scale and learning strategy scale are based on self-report data. The validity of these measures has been established repeatedly in prior research and with various populations. We used the last grade the students received in their foreign language class to provide evidence for the external validity of the scales created for the purpose of this study. As Table 2 demonstrates, students' achievement correlates significantly with most scales in the expected direction. The subscales "internal control" and "effort" of the motivation questionnaire and the subscale "collaboration" of the SILL were statistically unrelated to students' grades. Note that the association between the motivation and learning strategy scales cannot be interpreted in a causal manner. This is most obvious for the high correlation between the self-efficacy scale and grades. The confidence of doing well in the foreign language class is strongly influenced by prior achievement reflected in the last grade. The differential pattern of the correlation coefficients, however, corroborates the assumption that the scales reflect different cognitions and behavioral tendencies among students.

4. Results

Table 3 shows the correlation matrix of the eight motivation subscales and six learning strategies. The 14×14 correlation matrix is statistically identical for the four languages. In a multigroup structural equation model (SEM, Jöreskog & Sörbom, 2001), constraining all correlation coefficients to be equal across the four groups did not yield a significant model misfit ($\chi^2 = 306.47$, $df = 315$, $p = .622$). Beyond the statistical insignificance of the chi-square test, the range of the correlation

Table 3
Correlation matrix with motivation scales and learning strategies

	Integ. mot.	Intrin. mot.	Self-effic.	Mastery	Perf.	Ext. reg.	Int. ctrl	Effort	Extra-curr.	Cogn. lrng	Analytic	Compens.	Collab.	Envir.
Integ. mot.	1	.53/.61	.23/.37	.32/.39	.24/.33	−.03/−.05	.10/.26	.24/.4	.40/.45	.42/.46	.38/.42	.33/.44	.28/.37	.13/.40
Intrin. mot.	.556***	1	.20/.42	.32/.45	.00/.31	−.35/−.11	.12/.22	.21/.36	.36/.56	.36/.42	.20/.40	.21/.39	−.08/.28	.10/.29
Self-effic.	.305***	.342***	1	.40/.45	.28/.34	−.27/−.22	.14/.24	.10/.35	.12/.17	.25/.37	.26/.31	.35/.39	.07/.17	.25/.34
Mastery	.355***	.399***	.417***	1	.12/.36	−.28/−.07	.06/.29	.05/.21	.17/.32	.23/.36	.25/.41	.13/.33	.16/.18	.19/.37
Perf.	.215***	.146***	.351***	.127**	1	.10/.29	.12/.17	.07/.18	−.05/.17	−.03/.23	.08/.29	.09/.21	.02/.28	.12/.26
Ext. reg.	−.198***	−.333***	−.271***	−.300***	.138***	1	−.28/−.17	−.12/.08	−.21/−.08	−.17/−.05	−.19/.04	−.21/−.10	.00/.11	−.13/.14
Int. ctrl	.216***	.199***	.202***	.283***	.097*	−.191***	1	−.04/.07	.07/.28	.13/.23	.20/.34	.24/.33	.12/.23	.01/.14
Effort	.300***	.254***	.193***	.180***	.113**	−.041	.028	1	.08/.28	.31/.41	.16/.29	.18/.28	.14/.27	.15/.32
Extra-curr.	.429***	.527***	.138***	.304***	.053	−.172***	.126**	.185***	1	.32/.61	.37/.40	.34/.44	.06/.31	.19/.23
Cogn. lrng	.436***	.399***	.273***	.332***	.159***	−.100*	.184***	.351***	.377***	1	.46/.51	.42/.51	.29/.42	.27/.4
Analytic	.386***	.377***	.289***	.354***	.173***	−.123**	.281***	.236***	.403***	.477***	1	.62/.71	.32/.47	.05/.26
Compens.	.436***	.319***	.348***	.321***	.135***	−.153***	.277***	.188***	.368***	.440***	.620***	1	.41/.42	.18/.23
Collab.	.325***	.213***	.115***	.166***	.136***	.028	.144***	.261***	.288***	.389***	.383***	.407***	1	.07/.21
Envir.	.210***	.184***	.310***	.251***	.148***	−.047	.070	.267***	.213***	.334***	.256***	.219***	.174***	1

Note. Listwise deletions, $N=662$. * $p<.05$, ** $p<.01$, *** $p<.001$. Coefficients below the diagonal are for the entire sample; coefficients above the diagonal represent the range of correlation coefficients across the four languages studied.
Integ. Mot. = integrative motivation; Intrin. Mot. = intrinsic motivation; Self-effic. = self-efficacy; Mastery = mastery goal orientation; Perf. = performance goal orientation; Ext. Reg. = external regulation; Int. Ctrl = internal control; Effort = effort; Extra-curr. = extracurricular learning activities; Cogn. Lrng = cognitive learning strategies; Analytic = analytic strategies; Compens. = contextual compensatory strategies; Collab. = social support/collaboration strategies; Envir. = environmental optimization strategies.

coefficients (as shown in the upper diagonal matrix in Table 3) across the four languages further supports our assumption that the matrices are fairly similar. Therefore, we performed all further analyses for the entire sample.

Hierarchical multiple regressions were conducted using the eight motivation scales as predictors, and each of the six learning strategies as dependent variables. Because the distinction between intrinsic and integrative motivation was central for our analysis, we first tested the differences between both variables with respect to their correlations with the learning strategy scales. Using χ^2 difference testing in SEM, constraining all six correlation coefficients to be equal for integrative and intrinsic motivation results in a significant model misfit ($\chi^2=28.44$, $df=6$, $p=.001$). Table 4 shows the results for the follow-up tests for each learning strategy separately (with $df=1$ each). Intrinsic motivation is significantly more strongly associated with extracurricular activities, while integrative motivation is more strongly correlated with compensatory and collaborative strategies.

In order to determine whether intrinsic and integrative motivation explain specific variance of the six learning strategies, both integrative and intrinsic motivation were simultaneously entered in a multiple regression in the first step, followed by the other six motivation variables (self-efficacy, mastery goal, performance goal, external regulation, internal control, and effort) in the second step. Table 5 shows the results of the regressions for each of the six strategy dependent variables.

4.1. Extracurricular learning strategies

For extracurricular learning activities, the model accounted for 32% of the variance. Intrinsic motivation was the best predictor of students' reported use of extracurricular learning strategies ($\beta=.41$, $p<.001$), followed by integrative motivation ($\beta=.20$, $p<.001$). Mastery goal orientation was also a significant predictor ($\beta=.12$, $p<.01$), and self-efficacy negatively predicted the reported use of extracurricular learning strategies ($\beta=-.11$, $p<.01$).

4.2. Cognitive learning strategies

The model predicting cognitive learning strategies accounted for 29% of the variance. Integrative motivation was the best predictor of students' reported use of cognitive learning strategies ($\beta=.23$, $p<.001$), as well as effort ($\beta=.20$, $p<.001$), intrinsic motivation ($\beta=.15$, $p<.001$), mastery goal orientation ($\beta=.14$, $p<.001$), and external regulation ($\beta=.07$, $p=.05$).

4.3. Analytic strategies

For analytic strategies, the model accounted for 26% of the variance. Intrinsic motivation ($\beta=.17$, $p<.001$), internal control ($\beta=.16$, $p<.001$), mastery goal orientation ($\beta=.16$, $p<.001$), integrative motivation ($\beta=.14$, $p<.01$), effort ($\beta=.10$, $p<.01$), and self-efficacy ($\beta=.08$, $p<.05$) were all positive predictors of students' reported use of analytic strategies.

Table 4
Test of correlation differences between integrative and intrinsic motivation

	Integ. mot.	Intrin. mot.	$\chi^2_{(df=1)}$	p
Extra-curr.	.429***	.527***	7.19	.007
Cogn. lrng	.436***	.399***	1.02	.310
Analytic	.386***	.377***	0.06	.811
Compens.	.436***	.319***	10.27	.001
Collab.	.325***	.213***	9.40	.002
Envir.	.210***	.184***	0.50	.483
All six strategies			28.44 (df=6)	.001

Note. *** $p<.001$.

4.4. Contextual compensatory strategies

Twenty-seven percent of the variance was accounted for in the model predicting compensatory strategies. Integrative motivation was the best predictor of compensatory strategies (β=.31, $p<.001$). Self-efficacy (β=.18, $p<.001$), internal control (β=.16, $p<.001$), mastery goal orientation (β=.08, $p<.05$) were also positive predictors of the use of compensatory strategies. As shown in Table 5, intrinsic motivation is not a significant predictor of these strategies after the other six motivation scales are entered into the regression.

4.5. Social support/collaborative strategies

For collaborative strategies, the model explained 16% of the variance. Integrative motivation was the best predictor of students' report of collaborative learning strategy use (β=.24, $p<.001$). Effort (β=.17, $p<.001$), external regulation (β=.12, $p<.01$), and internal control (β=.09, $p<.05$) also positively predicted collaborative strategy use.

4.6. Environment optimization strategies

Finally, 16% of the variance was accounted for in the model predicting environment optimization strategies. Self-efficacy (β=.21, $p<.001$), effort (β=.19, $p<.001$), and mastery goal orientation (β=.13, $p<.01$) significantly positively predicted students' reported use of these types of strategies. As shown in Table 5, integrative motivation and intrinsic motivation were not significant predictors of environment optimization strategies once the other six motivation scales were entered into the regression.

5. Discussion

The purpose of this study was to demonstrate how the integrative motivation adds predictive and explanatory power to the field of foreign language learning motivation. As predicted, an integrative motivation positively predicted students' reported use of extracurricular learning activities, cognitive and analytic learning strategies, contextual compensatory strategies, as well as collaborative learning strategies. Intrinsic motivation, on the other hand, only predicted extracurricular learning activities, cognitive strategy use, and analytic strategy use among the students in this sample. However, there were no significant differences in the correlations between integrative and intrinsic motivation, and the other motivation and learning strategies variables (see Table 3). This illustrates the similarity between the two constructs in their impact on the language learning process. Only when the two motivations are entered into a regression simultaneously are the relevant differences in their predictive power revealed.

With respect to the relation between integrative and intrinsic motivation to the learning strategies, as predicted, students with integrative motivation were in fact more likely to report using compensatory strategies while learning how to speak a foreign language, confirming the implication made by Noels (2001) that students with an integrative orientation are more efficient learners. Students with integrative motivation are more interested in becoming immersed in a culture, and increase their capabilities of interacting with native speakers. If students are able to compensate for any lack of knowledge they have about a language, and are able to troubleshoot these problems by thinking of synonyms, asking native speakers to slow down or repeat themselves, or make gestures to help communicate their thoughts, they may be more likely to successfully communicate and interact with native speakers.

This also explains the high correlation between analytic strategies and compensatory strategies (r=.62). The analytic strategy scale assessed the extent to which students compared words they knew in English to words they were perhaps unfamiliar with in the foreign language, divided unknown words into understandable parts, and learned from their mistakes in the foreign language. Compensatory strategies included how students made guesses for words they did not know, made new word combinations or did not look up every new word they came across in an attempt to understand the sentence by its context. In

Table 5
Hierarchical regression table for six dependent variables

		Extra-curr.	Cogn. lrng	Analytic	Compens.	Collab.	Envir.
Step 1	Integrative motiv.	.201***	.228***	.143**	.305***	.236***	.041
	Intrinsic motiv.	.408***	.154***	.167***	.025	.042	.008
Step 2	Self-efficacy	−.109**	.051	.083*	.184***	−.024	.207***
	Mastery goal	.118**	.137***	.157***	.081*	.051	.129**
	Performance goal	−.034	.007	.032	−.033	.036	.026
	External regulation	.012	.073	.063	.030	.118**	.072
	Internal control	−.006	.058	.161***	.155***	.088*	−.012
	Effort	.018	.204***	.101**	.037	.172***	.194***
	R^2 for Step 2	.32**	.29***	.26***	.27***	.16***	.16***

Note. Standardized Beta coefficients shown. * $p<.05$, ** $p<.01$, *** $p<.001$.

this way, it can be seen how students' analytic strategies relate to compensatory strategies that students use to help them address their language learning difficulties.

It should be noted that the communities in which these students live are not necessarily environments that afford real immersion, and therefore are not authentic settings for pursuing an integrative motivation. Nevertheless, integrative motivation is not limited to cultural immersion, but also entails being able to communicate successfully with native speakers, which may include students' family members.

Integrative motivation also stands out as a significant predictor of collaborative strategies while intrinsic motivation is insignificant. Foreign language learners who wish to interact with native speakers are more likely to collaborate with other students to learn the material. Contradictory to our initial hypotheses, integrative motivation was not the best predictor of students' extracurricular learning activities. Instead, the intrinsic motivation to learn a foreign language was more predictive of employing these types of strategies. Students who are intrinsically motivated seem to focus on expanding their capacities and exploring new challenges in a similar way as students with a strong integrative motivation. Participating in extracurricular activities, such as reading books and initiating conversations in the foreign language one is attempting to learn, might indeed be helping a student pursuing intrinsic as well as integrative goals.

These analyses demonstrate not only that integrative motivation and intrinsic motivation are major predictors of foreign language learning strategies, but also that they are distinct predictors and each add their own explanatory power to the prediction of learning strategies. We were able to show that students who report having an integrative motivation to learn a foreign language were more likely to describe using specific learning strategies, which students who were intrinsically motivated did not necessarily employ. This may suggest that these more social strategies (compared to the cognitive and analytic strategies) are most helpful in developing students' foreign language proficiency and ability to successfully interact with native speakers. The latter one is most important for those language learners who are planning to use the language in the natural context of a foreign country. Future studies should continue to explore this relation, as well as extending the scope to the full mediational model examining both the relation between different motivations and learning strategies, but also how learning strategies might predict achievement in foreign language courses.

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