RELATIONSHIPS BETWEEN SECOND LANGUAGE LEARNING STRATEGIES AND LANGUAGE PROFICIENCY IN THE CONTEXT OF LEARNER AUTONOMY AND SELF-REGULATION

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ABSTRACT

The first section of the article provides a theoretical framework for understanding the relationship of language learning strategies and language proficiency. This framework is provided by two interrelated ideas: the educational concept of learner autonomy and the psychological theory of self-regulation. The second section presents research linking learning strategy use with learning outcomes, both in general academic learning and in language learning. The third section focuses on relationships between language learning strategy use and language proficiency in studies employing a well-known strategy use questionnaire, the *Strategy Inventory for Language Learning.* The final section raises issues for future research related to language learning strategies and language proficiency in the context of learner autonomy/self-regulation.

INTRODUCTION

Imagine a second or foreign language class with which you are somewhat or very familiar. Now consider which students in this class are the most competent in learning the language. These particular students are likely to be using a wide variety of *language learning strategies* and are probably on the way to becoming *autonomous, self-regulated learners*, that is, learners who take significant responsibility for their own learning.

Learning strategies are defined as "specific actions, behaviors, steps, or techniques —such as seeking out conversation partners, or giving oneself encouragement to tackle a difficult language task— used by students to enhance their own learning" (Scarcella & Oxford, 1992, p. 63). The term *strategy* implies conscious movement toward a goal. The penultimate goal of language learning strategies is to enable the learner to accomplish individual learning tasks (Richards & Lockhart, 1996), and the ultimate goal is to promote language proficiency (Tudor, 1996) so that the learner can use the language outside the classroom.[1]

The purposes of this article are:

• To discuss learner autonomy and self-regulation as a theoretical framework for understanding the role of language learning strategies;

• To synthesize findings from research on learning strategies and learning outcomes, both in general and in the area of language learning;

• To highlight research results about the use of language learning strategies in relation to proficiency in questionnaire-based studies employing the *Strategy Inventory for Language Learning;* and

• To point out remaining issues to be explored by future research on language learning strategies, language proficiency, and learner autonomy/self-regulation.

THEORETICAL FRAMEWORK: LEARNER AUTONOMY AND SELF-REGULATION

The educational concept of learner autonomy is grounded in the social-cognitive theory of self-regulation. Together, autonomy and self-regulation serve as an excellent theoretical framework for understanding the nature and role of language learning strategies.

LEARNER AUTONOMY AND LEARNING STRATEGIES

Learner autonomy is evident when the learner takes responsibility for his or her learning. Many theorists in the area of second and foreign language learning have discussed learner autonomy (see, for instance, Allwright, 1990; Holec, 1981, 1995; Littlewood, 1996; Wenden, forthcoming). These theorists define learner autonomy in slightly different ways.

Dickinson (1987) defines autonomy as a *situation* in which the learner takes over his or her own language learning. Holec (1981) defines it as a learner's *ability* to be responsible for one's learning. Littlewood (1996) says that autonomy is not just *ability* but also *willingness* to take responsibility. Allwright (1990) emphasizes that autonomy involves not only *ability* and *willingness* but also *action* in the direction of responsibility for learning. Little (1999) suggests that features of autonomy include being able to perform a given task independently, with situational flexibility, in contexts beyond the immediate one, and (in formal learning environments) with conscious intention and reflection.

Building on these definitions, here is a comprehensive definition of learner autonomy. Learner autonomy is the (a) ability and willingness to perform a language

task without assistance, with adaptability related to the situational demands, with transferability to other relevant contexts, and with reflection, accompanied by (b) relevant action (the use, usually conscious and intentional, of appropriate learning strategies) reflecting both ability and willingness. Learner autonomy leads to greater achievement or proficiency. This situation can be summarized by "five A's":

Ability, attitude, + action = autonomy $\rightarrow$ *achievement.*

Learning strategies play a key role in autonomy. Numerous researchers in the area of language learner autonomy identify learning strategies as relevant or even crucial (Cotterall, 1995a, 1995b; Dickinson, 1992; Little, 2000; Littlewood, 1996; Wenden, 1991). Strategies, when defined as above (specific actions or behaviors by which the individual learner attempts to improve his or her language learning) reflect the learner's degree of autonomy and are mechanisms by which the learner develops still greater autonomy.

Autonomy is a variable trait rather than a permanent state. In fact, Little says, the development of higher cognition, i.e., cognition well above the level of sensory perception, involves "a spiral process in which we move to new levels of autonomy only by first moving through new phases of dependence" (Little, 1998). To put it another way, higher-order cognitive development requires alternation between the social engagement necessary to receive assistance and the separation necessary to allow individual reflection. Learner autonomy does not refer to detachment of the individual from other people, from institutions, nor from special materials. "Total detachment is a principal determining feature not of autonomy but of autism.".. (Little, 1991, 5). Little, like Williams and Burden (1997), emphasizes the importance of social interaction in cognitive development and second language learning.

SELF-REGULATION AND LEARNING STRATEGIES

That which is called autonomy in the foreign and second language field is often known as *self-regulation* in the psychology field. Self-regulation is the heart of the social-cognitive theory of Russian psychologist Lev Vygotsky (1978, 1986; for specific applications to language learning, see Little, 1999 and Scarcella & Oxford, 1992; and for still other important aspects of self-regulation, see Iran-Nejad, 1990 and Prawat, 1998).

In Vygotsky's theory, the goal of learning is to develop an independent, self-regulated, problem-solving individual. This can occur only with the help of "more capable others" (teachers, more competent peers, parents, or others), who offer assistance to the learner. This assistance is metaphorically known as *scaffolding,* i.e., the external structure that supports and holds up a building that is under construction. There comes a time when the edifice needs less and less external support or scaffolding. When no longer essential, it is gradually removed. For instance, in higher-order cognitive development, the "more capable other" removes the scaffolding bit by bit from the individual learner as the learner becomes increasingly independent and self-regulated.

Vygotsky's theory also involves a different metaphor: the *zone of proximal development* or ZPD. The ZPD is the difference between the learner's actual performance level and the potential performance level that could occur with the appropriate assist-

ance from more capable others. The teacher, parent, or competent peer helps the learner move through the ZPD until the learner has reached optimal performance. The ZPD is more of a heuristic phenomenon than an operationally measurable thing; it is meant to remind us of the great importance of the "social" part of "social cognition."

Vygotsky's psychological work on self-regulation involves learning strategies, although he does not use the term *strategies.* Self-regulation, in Vygotsky's view, is «the process of planning, guiding, and monitoring one's own attention and behavior» (Berk & Winsler, 1995, 171). Planning, guiding, and monitoring, along with organizing and evaluating, are among the essential learning behaviors that educators call *metacognitive learning strategies* —often corporately referred to as *metacognition.* (For more about metacognitive learning strategies in the language field, see O'Malley & Chamot, 1990; Oxford, 1990, 1996b; Wenden, 1991, forthcoming; Wenden & Rubin, 1987).

Metacognitive strategies are internalized via social interaction with more competent people in the environment, says Vygotsky's theory. Likewise, with the right assistance, the learner internalizes *cognitive learning strategies,* such as analyzing, synthesizing, and evaluating, called by Vygotsky "higher-order cognitive functions".

At the same time, social interaction requires what Oxford (1990, 1996b) terms *social learning strategies:* asking questions, requesting assistance, and collaborating with others via language, or social speech. Social speech (talking with others), according to Vygotsky, encourages the learner to develop egocentric speech (talking to oneself aloud), which in turn stimulates the development of inner speech (reflecting metacognitive strategies that guide action) (Little, 1999).

In addition to the three general groups of learning strategies (metacognitive, cognitive, and social) just described, Oxford (1990, 1996b) suggests three additional kinds of strategies that might be part of language learner self-regulation. *Affective strategies* (e.g., lowering anxiety through music, or rewarding oneself for good work) help learners manage their emotions and motivation. *Compensatory strategies* (e.g., guessing from the context, making gestures to communicate unknown words) compensate for or make up for missing knowledge. *Memory strategies* (e.g., remembering through mental imagery or acronyms) are cognitive strategies that serve the special function of embedding new information into long-term memory.

As we have seen, learning strategies are very important to learner autonomy and self-regulation. These strategies also have a profound impact on the outcomes of learning, as demonstrated in the next section.

LEARNING STRATEGY USE, LEARNING OUTCOMES, AND STRATEGY INSTRUCTION

Research shows many relationships between the use of learning strategies on the one hand and learning outcomes (variously termed achievement, proficiency, or competence) on the other. This section provides a brief summary of a number of investigations.

LEARNING STRATEGY USE AND POSITIVE LEARNING OUTCOMES

In subject areas not involving second or foreign languages, the use of learning strategies is demonstrably related to achievement (Pressley & Associates, 1990;

Weinstein, Goetz, & Alexander, 1988; see also the reviews included in Chamot, Barnhardt, El-Dinary, & Robbins, 1996 and Chamot & O'Malley, 1996). Research has repeatedly shown this relationship in content fields ranging from physics to reading and from social studies to mathematics. In light of this remarkable association between learning strategy use and positive learning outcomes, it is not surprising that students who frequently employ learning strategies enjoy a high level of self-efficacy, that is, a perception of being effective as learners (Bandura, 1997; Zimmerman & Pons, 1986).

Language learning strategy use and language proficiency

Within the field of foreign and second language learning, authors (Cohen, 1990; O'Malley & Chamot, 1990; Oxford, 1990, 1996b; Wenden & Rubin, 1987) have identified numerous links between the use of language learning strategies and proficiency in the targeted language. In studies by Rubin (1975) and Naiman, Fröhlich, Stern, and Todesco (1975), successful language learners consciously used certain types of learning strategies, such as guessing from context, to become better learners. In other studies, successful learners used a larger number and wider range of strategies, employed them more effectively, fitted them more closely to the task, and understood the task better than did unsuccessful language learners (see the review in Chamot et al., 1996). In an investigation by Nunan (1991), effective learners differed from ineffective learners in their greater ability to reflect on and articulate their own language learning processes. Successful learners used strategies for active involvement more frequently in Green and Oxford's (1995) study.[2]

The frequency of use of language learning strategies is also associated with differences between second and foreign language environments, which in turn appear to be associated with the need for language proficiency. A *second language* is a language learned in an environment where it is the primary language of daily communication for most people; some degree of competence or proficiency in the language is needed for survival (example: learning English in the U.S. or Australia). A *foreign language* is a language learned in a setting where it is *not* the usual medium of interaction for the majority of the population, and competence or proficiency is *not* needed for survival purposes (example: learning Russian in France or Papua New Guinea). Research shows that, in general, second language learners develop a wider range and frequency of learning strategies than do foreign language learners, possibly because second language learning environments simultaneously demand greater language proficiency and offer greater environmental supports (Green & Oxford, 1995).

Strategy instruction studies

To increase language proficiency, some researchers and teachers have provided instruction that helped students learn how to use more relevant and more powerful language learning strategies (see, e.g., Chamot et al., 1996; Cohen et al., 1995; Cohen & Weaver, 1998; Dadour & Robbins, 1996; Nunan, 1997). Positive effects of strategy instruction have emerged for proficiency in speaking (Dadour & Robbins, 1996; O'Malley, Chamot, Stewner-Manzanares, Kupper, & Russo, 1985) and reading (Park-Oh, 1994), although results for listening have not been significant (O'Malley et al., 1985). In other studies, strategy instruction has led to increased language learning motivation (Nunan, 1997) and greater strategy use and self-efficacy (Chamot et al., 1996).

STRATEGY USE AND LANGUAGE PROFICIENCY IN STUDIES EMPLOYING
THE *STRATEGY INVENTORY FOR LANGUAGE LEARNING*

Research investigations involving a questionnaire or summative rating scale known
as the *Strategy Inventory for Language Learning* or *SILL* (Oxford, 1990) have produced
still more evidence demonstrating that strategy use relates to language proficiency.

ABOUT THE *SILL*

The *SILL* is highlighted here because it is the most widely used language learn-
ing strategy-assessment instrument in the world, although many other kinds of strat-
egy assessment tools are useful for a variety of purposes.[3] The *SILL* also has well
documented reliability[4] and validity.[5]

This questionnaire is currently used in at least 17 languages (Cantonese, English,
Finnish, French, Dutch, German, Japanese, Italian, Korean, Mandarin, Portuguese,
Russian, Serbo-Croatian, Spanish, Swedish, Thai, and Ukrainian). To date it has been
administered to between 9,000 and 10,000 students worldwide; has resulted in more
than 40 dissertations, theses, and other major studies; and is the basis of dozens of
research articles published in refereed journals. The *SILL* has two forms: a 50-item
questionnaire for people learning English as a second or foreign language and an 80-
item questionnaire for native English speakers learning other languages.

The instrument was originally designed for the U.S. Defense Language Institute,
which wanted to determine how the use of learning strategies influences the success
or failure of military personnel learning foreign languages (Oxford, 1986). However,
a far greater scope emerged for the *SILL* when it was adopted by various universities,
schools, agencies, and institutes around the globe.

The *SILL* is comprised of Likert-scaled items (scale 1-5, ranging from "never or
almost never" to "always or almost always"), with each item expressing a learning
strategy. It has the same general format as the *Learning and Study Strategy Survey
(LASSI)* (Weinstein et al., 1988). An example of a *SILL* item is: "I try to find patterns
in the language."

Items in the *SILL* are grouped into the six categories of strategies mentioned
earlier: memory-related, cognitive, compensatory, metacognitive, affective, and so-
cial strategies. The first three categories are called "direct" strategies because they
directly involve processing or using the language that is being learned. The latter
three categories are collectively labeled "indirect" strategies because they do not in-
volve the language itself; instead they allow the learner to manage himself or herself
with regard to the following: planning, organizing, monitoring, evaluating, maintain-
ing motivation, lowering anxiety, and learning with others.

The *SILL*'s basic purpose is to provide a general picture of the individual learner's
typical strategy use, rather than a specific portrayal of the strategies used by the learner
on a particular language task. Results of the *SILL* have been applied in different ways:

• *as practical information for the teacher to improve language teaching and hence
learning* (e.g., giving informal, on-the-spot strategy assistance to their students, ei-
ther individually or in groups; knowing which strategies should be taught via more
formal, systematic strategy instruction woven into regular language classes; deter-

mining changes over time in the strategy use of their students; and identifying how strategy use relates to language proficiency of individual students or classes),

• *as practical information for "language counselors" in agencies and institutes* (e.g., using *SILL* results, along with data on language learning styles and motivation, as a basis for offering formalized, private, one-to-one language counseling services outside of the classroom for students experiencing serious difficulties in learning a language), and

• *as research data for building stronger theories of learning strategies and learner autonomy* (e.g., employing *SILL* results to obtain a group picture of learning strategy use across many individuals; to study the internal factors of the *SILL,* to make comparisons of these factors across cultures; to determine how strategy use relates to language proficiency and cultural beliefs about learner autonomy in various groups; and to identify relationships between strategy use and a host of additional background factors: language learning environment, gender, age, beliefs about learner and teacher roles, intrinsic and extrinsic motivation, motivational goals, anxiety, and risk-taking).

EMPIRICAL RELATIONSHIPS BETWEEN *SILL*-MEASURED STRATEGY USE AND LANGUAGE PROFICIENCY

Many *SILL s*tudies have shed light on relationships between strategy use and language proficiency. These investigations involve several kinds of analyses:

• *Prediction via Multiple Regression*: With multiple regression, researchers have tested the value of various types of strategies as predictors of language proficiency. One of the key regression statistics is called $R^2,$ as $R^2 = .49$. This figure, when expressed as a percentage, indicates that 49% of the variance in the thing that is predicted, such as language proficiency, is explained by the predictors (for instance, by various types of language learning strategies and sometimes gender, motivation, or other variables).[6]

• *Correlation*: Researchers have calculated correlations between the frequency of strategy use and language proficiency. Correlations are expressed by the letter r and show the strength (from .00, no correlation, to 1.00, complete correlation) and the direction (positive or negative) of a relationship. For example, the correlation $r = .70$ between learning strategy use and language proficiency would mean that the relationship is positive and fairly strong, whereas the correlation $r = -.15$ would indicate that the relationship is negative and very weak.[7]

• *Studying Effects via Analyses of Variance (ANOVA) and Multiple Analyses of Variance (MANOVA)*: Some investigators have employed ANOVA and/or MANOVA to identify how the use of strategies in the *SILL*'s six categories (and other variables) affect language proficiency. Other researchers have used these statistical techniques to determine how language proficiency levels relate to the use of language learning strategies of various types.

The following paragraphs give the statistically significant results of studies using any of these analyses to determine relationships between strategy use and language proficiency. Results are organized according to the type of learning environment: second language learning versus foreign language learning. Remember that second

language learning occurs in settings where the language is the main vehicle of every-day communication (and survival) for most people, while foreign language learning takes place in environments where this is not the case.

Second Language Learning Environments

Among 305 Afrikaans-speaking learners of English as a second language (ESL) in South Africa, strategy use on the *SILL* strongly predicted language proficiency on the *Test of English as a Foreign Language (TOEFL),* which is used in both second and foreign language learning environments. In this study, 46% of the variance in *TOEFL* scores was explainable by strategy use as measured by the *SILL*.[8] Metacognitive strategy use was the best predictor, followed by social and affective strategy use. In a canonical correlation analysis conducted as part of the same investigation, strategy category scores on the *SILL* and *TOEFL* section scores were strongly related, $r = .73$ (Dreyer & Oxford, 1996).

In a study of 141 adult ESL learners in the U.S., Phillips (1990, 1991) used ANOVA and found a curvilinear relationship between frequency of strategy use on the *SILL* and English proficiency levels on the *TOEFL.* Specifically, mid-proficient learners showed higher overall strategy use than did high-proficient and low-proficient learners.

Green (1991) conducted a study of strategy use and language proficiency among 213 Puerto Rican university students who were studying English on the island. Puerto Rico is included here as an ESL learning environment, although it has some EFL features.[9] Using the standardized English test known as the *ESLAT*,[10] Green found an average correlation of $r = .35$ between *SILL* scores and *ESLAT* scores. In that study, using ANOVA, Green found a curvilinear relationship between strategy use and ESL proficiency, just as Phillips (1990, 1991) had demonstrated.

In a later study with 374 Puerto Ricans learning English at the same university, Green and Oxford (1995) found a linear relationship between English proficiency levels on the *ESLAT* and four kinds of strategies: compensatory, cognitive, metacognitive, and social. More proficient students used these strategies most frequently. In this larger study, the curvilinear effect found in the earlier Puerto Rican investigation was not present. Gender differences occurred in the 1995 study, favoring women as more frequent strategy users.

Foreign Language Learning Environments

Multiple regression analysis showed that eight *SILL* items predicted 58% of the variance in *Comprehensive English Language Test (CELT)* scores of 78 first-year students of English as a foreign language (EFL) at a Japanese women's college (Takeuchi, 1993).[11] Four of these items predicted proficiency positively (writing notes, avoiding verbatim translation, analyzing words, paying attention), but four others were negative predictors (questioning, flashcards, feelings in diary, looking for English-using opportunities). The researcher explained that these results largely stemmed from cultural beliefs and values (Takeuchi, 1993).

In a different EFL study conducted in Japan, *SILL* scores and English language proficiency self-ratings had a moderate correlation that averaged approximately $r = .30$ (Watanabe, 1990). Participants in that study were university and college students of EFL.

SILL and *TOEFL* scores of 332 university-level EFL students in Korea produced moderate correlations. These were: $r = .33$ (cognitive strategies), $r = .30$ (social strategies), $r = .28$ (metacognitive strategies), $r = .24$ (memory strategies), $r = .23$ (affective strategies), and $r = .21$ (compensatory strategies) (Park, 1994). In this study, ANOVA showed that high strategy users had higher *TOEFL* proficiency levels than did medium and low strategy users (Park, 1994).

In Taiwan, Ku (1995) conducted a study to assess the value of *SILL*-gauged strategy use for predicting EFL proficiency. Proficiency was measured via transformed, standardized *T*-scores for a nationally normed EFL exam (for high school and university students) and for EFL grades (for middle school students). The investigation involved 904 Taiwanese students from these three educational levels. Results of multiple regression analyses demonstrated that strategy use scores in various *SILL* categories predicted EFL proficiency. Specifically, 21% of the variance in EFL proficiency was explained by *SILL*-measured strategy use, with the best predictors being cognitive and compensation strategies.[12]

Kato's (1996) multiple regression study involved 40 English-speaking learners of Japanese Kanji characters, which are known to be quite difficult. This research took place at an Australian university. The *SILL* effectively predicted success on Kanji test scores, with 51% of the variance in Kanji proficiency attributable to strategy use as reported on the *SILL*.[13] Best predictors were metacognitive and memory strategies.

SILL strategy-category scores and EFL course grades of 73 junior high students in Turkey were related at a moderate level. Correlations were: $r = .40$ (cognitive strategies), $r = .36$ (metacognitive strategies), and $r = .24$ (compensation strategies) (Oxford, Judd, & Giesen, 1998).

For 110 university students majoring in English in Thailand, *SILL* compensatory strategy frequencies and standardized EFL placement test scores were moderately related, $r = .38$ (Mullins, 1991). A moderate, negative correlation emerged between the frequency of affective strategy use and entrance exam scores, $r = .32$, thus raising the question: Does anxiety lead to greater use of affective strategies and lower language proficiency? Other research reported in Oxford (1996b) tends to support this possibility.

In an investigation of a highly selective group of 262 adult, English-speaking foreign language learners at the U.S. Foreign Service Institute (FSI), Oxford and Ehrman (1995) reported that the *SILL* correlated with foreign language proficiency. For metacognitive and cognitive strategies, the correlation was strong, $r = .61$. For memory-related, compensatory, affective, and social strategies, the correlations were more moderate.

SUMMARY AND DISCUSSION OF *SILL* RESULTS RELATED TO LANGUAGE PROFICIENCY

In short, language learning strategies do indeed make a significant difference in language proficiency. With multiple regression analyses, *SILL*-gauged strategy use explained 56% of the variance in EFL proficiency in a Japanese study, 51% of Kanji proficiency in an Australian study, 46% of ESL proficiency in a South African study, and 21% of EFL proficiency in a Taiwanese study. The average of these is 44%, indicating that *SILL*-measured strategy use explains 44% of the variance in language proficiency across these four studies. The multiple regression results indicate that (a)

language proficiency can be predicted in both foreign language and second language environments and (b) the *SILL* appears to be quite a useful predictor of language proficiency.

It is instructive to compare these predictive strategy-and-language-proficiency findings with results of a 1,650-student U.S. study involving a general learning strategy questionnaire, the *LASSI* (mentioned earlier), and a general achievement test known as the *Preliminary Scholastic Aptitude Test* or *PSAT*. The *PSAT* is a well-known academic achievement test designed for use with high school students who are preparing for university admission. Overall, the *SILL*'s value in predicting language proficiency (as shown by the ability to explain 44% of the variance in language proficiency across four studies) is slightly greater than the *combined* value of the *LASSI* and the *PSAT* for predicting high school grade point averages (as shown by the *LASSI-PSAT* combination's ability to explain 38% of the variance in high school grades) (see Evertson, Weinstein, Roska, Hanson & Laitusis, 1998).

Strong correlations emerged between language proficiency and *SILL*-assessed strategy use among ESL learners in South Africa and among diplomats learning foreign languages in the U.S. ($r = .73$ and $r = .61$, respectively), although most of the correlations between strategy use and language proficiency were somewhat lower for EFL learners in five countries ($r = .30$ to $.50$). By way of comparison, the Evertson et al. study (1998) in the U.S. showed correlations ranging only as high as $r = .31$ between sections of the *LASSI* and sections of the *PSAT*.

Some ANOVA and MANOVA studies showed linear relationships between strategy use and language proficiency (i.e., greater strategy use frequency $\rightarrow$ greater proficiency), while other such studies displayed curvilinear relationships. The meaning of the curvilinear relationships is still open, but it might have something to do with the automaticity with which some high-proficiency learners employ learning strategies. Perhaps highly proficient learners in certain settings —especially second language learning environments— might have less need for consciously deployed strategies than less proficient learners (or learners in foreign language learning environments, where resources and input in the language are not as prevalent). It might be that highly proficient learners of a second language have, because of the necessarily frequent use of the language and of language learning strategies, made their strategy use so automatic that they no longer *consciously* employ these strategies.[14]

The above findings concerning *SILL*-assessed strategy use and language proficiency are complemented by results of other studies involving the *SILL*. *SILL* factor analytic results differ somewhat, although not completely, among various cultural groups (e.g., People's Republic of China, Taiwan, India, Japan, Egypt, U.S., Puerto Rico) (Bedell, 1996; Hsiao, 1995; Oxford & Burry-Stock, 1995; Sheorey, 1999; Takeuchi, 1997). Various researchers (e.g., Yang, 1992) have demonstrated that cultural beliefs differ concerning the value of learner autonomy and learning strategies in the development of language proficiency, so it is understandable that factor patterns would differ somewhat across cultures.

Although there is insufficient space to explore other findings in detail here, many *SILL* studies have shown additional results that might someday prove useful for understanding more about the relationships among learning strategy use, language proficiency, and learner autonomy/self-regulation. First, there are strong links between

strategy use and motivation, and motivation is often related to language proficiency and learner autonomy (see Oxford, 1996a and Schmidt, Boraie, & Kassabgy, 1996 for many sources that offer supporting evidence). Second, on *SILL*-derived instruments, young children use some different strategies from older language learners, but there is notable overlap (Gunning, 1997). Third, in at least a dozen studies in various parts of the world, females have reported using language learning strategies, measured by the *SILL* and a variety of other instruments, significantly more frequently than males (Zoubir-Shaw & Oxford, 1995), but these patterns are in certain Middle Eastern cultures (Kaylani, 1996), suggesting that socialization might play a role. Fourth, the *SILL* has been shown anecdotally to be a useful part of learner training/development sessions, woven into regular classroom work (Ehrman & Oxford, 1989, 1990; Oxford & Ehrman, 1995).

This section has presented information about the *SILL* and findings from an array of *SILL* studies linking strategy use and language proficiency. We are now ready to consider the many issues that remain to be explored.

WHAT REMAINS TO BE EXPLORED IN FUTURE RESEARCH

This section lists some key questions that need to be answered in future research on language learning strategies, language proficiency, and learner autonomy/self-regulation.

• Letting Teachers Know: How can we best help teachers understand the significant influence that strategy use has on language proficiency —or, for that matter, on academic performance in general? (See books by O'Malley & Chamot, 1990; Oxford, 1990, 1996b; Wenden & Rubin, 1987; Pressley & Associates, 1990; Pressley with McCormick, 1995; Weinstein et al., 1988; and others in language learning and/or general educational psychology.)

• Assessing Language Learning Strategy Use: This article has shown the utility of one form of language learning strategy assessment, the questionnaire. What about other forms of strategy assessment? For what purposes and under what conditions should they be employed? (For some initial ideas, see Cohen & Scott, 1996.)

• *Helping Individuals Become Better Learners*: What is the best way to teach strategies and foster autonomy in a highly diverse, multilingual ESL classroom? In a linguistically homogeneous foreign language classroom? In classrooms for other subject fields and with varied groups? How effective is strategy instruction? Does the effectiveness of strategy instruction depend on learner motivation, institutional practices, cultural beliefs, familial beliefs, and other factors? Can or should an entire language curriculum be based on learning strategies? (See Cohen, 1990; Cohen & Weaver, 1998; Cohen, Weaver, & Yi, 1995; Dadour & Robbins, 1996; Nunan, 1997; O'Malley & Chamot, 1990; Oxford, 1990, 1996b; Wenden & Rubin, 1987. Also consider more general works by Pressley & Associates, 1990; Pressley with McCormick, 1995; Weinstein et al., 1988.)

• *Making Sense of the Language Learning Environment*: Why do students in second and foreign language learning situations sometimes differ in their use of lan-

guage learning strategies? How does the learning environment affect the frequency of strategy use and choice of various kinds of strategies? Is motivation implicated in these differences? (For some interesting thoughts on these matters, see Green & Oxford, 1995; LoCastro, 1994.)

• *Understanding the Role of Gender*: Why are gender differences frequently reported in language learning strategy research? What does this say, if anything, about learner autonomy and self-regulation in males and females? What does it tell us, if anything, about foreign and second language proficiency? (Gender role development research would be very enlightening here; see Zoubir-Shaw & Oxford, 1995, for leads.)

• *Comprehending the Influence of Age*: What is the longitudinal, lifespan progression of strategy use and autonomy for individuals? How do strategy use and autonomy relate to the general development of cognition and personality? (Erikson's psychosocial stage theory, described by Williams & Burden, 1997, and other lifespan developmental theories might give hints. Long-term longitudinal studies of autonomy and learning strategy use are sorely needed.)

• *Revealing Cultural Effects*: How much should we push learner autonomy and strategy use if they are not a strong part of a culture's belief system? How is the individual's zone of proximal development shaped by cultural influences? To what extent can or should learners or teachers challenge anti-individualistic cultural beliefs? (Consider ideas about learner autonomy from Wenden, forthcoming, and Little, 1991, 1999; ZPD-related concepts from Vygotsky, 1978; and empirical research on cultural belief systems from Hofstede, 1986.)

The challenge is here to help create more effective language learners who will be able to use their new languages for actual communication. Three pieces of the puzzle —learning strategy use, language proficiency, and learner autonomy or self-regulation— must fit together closely and effectively in order for us to meet the challenge. Therefore, we must continue to explore the remaining issues and questions raised here concerning strategies, proficiency, and autonomy/self-regulation. The *SILL,* along with other strategy assessment modes, can be of service in this quest.

Notes

[1] Andrew Cohen (1997) distinguishes between *strategies for language learning* and *strategies for language use*. However, Little (1999) and Oxford (1990) suggest that language learning and language use are not separable, because each occasion of language use is a stimulus to further language learning, and each event of language learning is preparation for language use.

[2] In addition, language learning strategy use relates to choice of a non-technical academic major and to gender (for details see Oxford, 1996b).

[3] Other ways to identify the strategies people use to learn languages (and the frequency of use of these strategies) include diaries written by the learner, dialogue journals that allow written communication between learner and teacher, classroom discussions by groups of learners, observations by the teacher, and (often videotaped) "think-alouds" in which a learner mentions the strategies used while doing a particular language task. Each strategy

assessment tool, including the *SILL,* has its own advantages and disadvantages and is useful for specific research-related and instructional purposes (for details, see Cohen & Scott, 1996; Nunan, 1995).

[4] In a number of reliability studies (see Bedell, 1996; Ku, 19965; Oxford & Burry-Stock, 1995), the Cronbach alpha internal consistency index was .94-.98 for the 80-item *SILL* when administered in English (or a translation) to language-homogeneous groups. Alpha was .89-.90 for the 50-item version when administered in English to non-native English speakers in groups containing many different mother tongues.

[5] Various kinds of validity have been demonstrated for the *SILL.*

• *Concurrent Validity*: As expected, the SILL is significantly correlated with the *Learning and Study Strategy Inventory, the Modern Language Aptitude Test, the Learning Style Profile, the Myers-Briggs Type Indicator, the Style Analysis Survey, the Affective Survey*, and other relevant tests (Dreyer & Oxford, 1996; Ehrman & Oxford, 1989, 1990; Oxford & Ehrman, 1995).

• *Content Validity*: Two strategy experts independently matched SILL items with entries in a comprehensive strategy taxonomy; resulting concordance of raters was 99% (Oxford, 1990).

• *Social Desirability Response Bias*: (a threat to validity): With the *Marlowe-Crowne Social Desirability Scale*, the SILL showed no such bias in studies of EFL students (N=505, Yang, 1992; N = 904, Ku, 1995).

[6] Information ordinarily presented in multiple regression studies includes: the kind of regression used (forward selection, backward selection, stepwise); standard error; *t* for the null hypothesis; significance of the overall regression model and for each predictor; multiple *R* and R^2 for the whole model; the percentage of variance in the dependent variable, say language proficiency, explained by the predictors in the regression model; and the beta weights of each predictor indicating its strength in the prediction.

[7] The index r^2 is the square of the correlation coefficient, *r.* Known as the coefficient of determination or the shared variance, r^2 works in the same fashion for correlational analyses as R^2 does for multiple regression analyses. The coefficient of determination indicates how much of the variance in one of the two correlates, say language proficiency, is explained by the other correlate, such as the total *SILL* score. If $r^2 = .45$, this means that 45% of the variance is shared by the two correlates (which is the same as saying that the amount of variance in language proficiency explained by learning strategy use, or vice versa, is 45%). However, r^2 is reported only infrequently in language learning studies.

[8] Multiple $R = .68$ and $R^2 = .46$. See the study itself for beta weights and other information.

[9] Puerto Ricans normally speak Spanish during everyday communication and do not need to know English to survive (hallmarks of an EFL setting); nevertheless, there is abundant input in English, many opportunities to use English, and requirements for very long-term studying of English (often viewed as signs of an ESL setting). This is definitely a "hybrid situation". Puerto Rico is classified here as an ESL learning environment for the sake of convenience and because it does have some ESL attributes.

[10] The *ESLAT (ESL Achievement Test)* is a *TOEFL*-like test created especially for Puerto Rico by the *TOEFL* publisher.

[11] Multiple $R = .75$ and $R^2 = .58$. See the study itself for beta weights and other information.

[12] Multiple $R = .45$ and $R^2 = .21$. See the study itself for beta weights and other information.

[13] Multiple $R = .72$, and $R^2 = .51$. See the study itself for beta weights and other information.

[14] Some researchers state that if a strategy is used so often that it becomes automatic and unconscious, then it is no longer a strategy but should be termed a *process, procedure,* or *procedural skill* (O'Malley & Chamot, 1990).

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