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The Theoretical Study of Motivational Transfer and Entertainment Use in Self-study CALL

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Abstract

This study investigates how best to integrate entertainment aspects into self-study CALL in order to improve L2 learners' motivation both effectively and systematically. Three theoretical approaches will be taken to this research question: the synthesis of L2 motivation theories and classroom CALL studies addressing motivational transfer, the extension of classroom CALL application into self-study CALL, and the incorporation of motivational entertainment factors into self-study CALL motivating mechanisms.

From the analysis of the CALL studies based on six current L2 motivational theories (the socio-educational model, self-determination theory, neurobiological approach, task motivation, flow theory, and the process-oriented model), it is elucidated that CALL applications systematically influence improvement in motivation. From this process, not only the interrelations between the theories are found, but also concrete factors affecting each motivational mechanism.

Based on these findings, self-study CALL is discussed as an extension of classroom CALL applications. This indicates that even if self-study CALL cannot always influence communicative factors in the same way as the classroom CALL applications, the other factors that affect classroom CALL applications are directly integrated into self-study CALL.

Furthermore, the entertainment media has systematic psychological functions applicable to the target group, and these psychological functions can be incorporated as effective motivating factors in self-study CALL motivational mechanisms.

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Chapter 1

Introduction

To acquire a second language (L2), learners must spend a long time in learning it (Gass & Selinker, 2001). Generally, a learner studies L2 in an academic setting, especially in compulsory education; however, second language exposure in L2 academic contexts is insufficient, and to succeed in L2 learning, learners should study L2 by themselves outside the classroom (Takeuchi, 2007). In this circumstance, one possibly effective method to improve self-study environment is Computer Assisted Language Learning (CALL).

CALL is, broadly, the application of computer systems to support and improve language learning settings (Egbert, 2005). Expected advantages of CALL are that it can improve independent language learning environments, provide authentic materials, help learners to understand abstract concepts as concrete images, and improve learners' motivation (Lai & Kritsonis, 2006). Regarding motivational improvement, Warschauer (1996) argued that many researchers emphasized it as one of the biggest advantages in CALL applications. Since motivation has been thought to be a very important factor influencing whether a learner can acquire language successfully or not – highly motivated students do seem to be more successful in terms of acquiring language (Dörnyei, 2001b) – there is a strong possibility that CALL could positively affect learners' motivation.

However, this notion of high expectation of motivational influence from the latest form of electronic technology is not a new idea that has emerged recently. Previous technologies gained attention because of their potential effect on language learning, such as improvement to the learning environment, items for more efficient learning, and motivational effects.

Salaberry (2001) summarized the history of technology uses and the expectation of language learning improvement. The first article to discuss technology use in language learning was written by Clarke and published in 1918. Introducing the phonograph as a language learning tool, Clarke suggested that the phonograph could assist in improving speech through learning pronunciation, and also discussed the motivational influence of the phonograph on learners due to the novelty value of the phonograph as a teaching tool. From the very first introduction of technology use in language learning, and as each subsequent new technology emerged, researchers would suggest its advantages. For example, radio as teaching tool was introduced in 1934 by Bolinger; television, films and videos were discussed by Gottschalk in an article published in 1965 (Salaberry, 2001). During this century, technology has further dramatically developed, and the current computer is so sophisticated that it can manipulate graphics, sound, movies, and texts at a very fast speed. However, the question remains: how can the computer best be used in order to improve learners' motivation effectively?

To meet this challenge, one method of improving learners' motivation could be by integrating entertainment factors in language learning contexts. A major reason for integrating entertainment into CALL is that the use of entertainment has the potential to give self-study greater purpose.

This approach – the integration of entertainment aspects in educational contexts – has already been attempted in other educational fields. In the area of computer assisted instruction (CAI), educational software with some entertainment aspects in their content has been created; in particular, CAI consisting of video-game content called *edutainment*. The potential advantage of edutainment is that it has the strong ability to capture learners' motivation to play and/or study with it, and the continuous learner involvement enables them to learn effectively

(Purushotma, 2005).

However, edutainment is controversial since it poses two major pedagogical issues:[1] “1) Can teaching materials and methodologies be both educational and entertaining at the same time? 2) Are education and entertainment incompatible?” (Wood, 1998, p. 1) These issues can be presented on the following concrete problems: 1) learning through edutainment, learners are forced to be passive information receptors, only gathering information, not to be active learners who think and construct acquired knowledge, 2) edutainment changes learners’ perception of learning for the worse – learning without fun is not learning, merely a burden, 3) fundamentally, edutainment users are not learning, but just playing (Okan, 2003).

As shown above, opponents have criticized entertainment CAI (CALL can be included in this argument), but these criticisms come from dissatisfaction with the lack of educational improvement in earlier edutainment software. Edutainment software was advertised as the learning method that dramatically improves learners’ target abilities (Okan, 2003). However, much edutainment software was just recycling original video game components to suit a learning context: for example, adapting an invader game to a vocabulary shooting game could not meet the expectation of both motivational and educational improvement (Purushotma, 2005). Therefore, Okan (2003) states that:

> … advertising of “edutainment” materials is proceeding at full force without any significant, evaluative studies into the effects that the very use of these materials has on young people. Almost all of the attention has focused on how to use them as a tool to increase students’ motivation and engagement in the learning context. Almost no attention has been paid to the broader and more fundamental issue of the impact of edutainment software on bringing about a change in the definition of learning. (p. 262)

This indicates that insufficient attention to the design of content – without enough

[1] The other issue in entertainment use in education – the negative effects of entertainment – is discussed in chapter 4.

understanding of its technological elements and methodological aspects – resulted in dissatisfaction with edutainment works. On the other hand, if these aspects are incorporated well, improved motivation, and thus learning outcomes, are distinct possibilities.

Similarly, as with entertainment software in other educational fields, it may be worthwhile to consider entertainment applications in CALL from the perspective of methodological and technological theories.

Regarding classroom CALL applications, some motivational studies were able to observe supportive outcomes that show the effectiveness of CALL (Beauvois, 1995; Warschauer, 1996; García & Arias, 2000; Appel & Gilabert, 2002; Chang, 2005; Jarrell & Freiermuth, 2005, details are introduced in chapter 3). However, whether or not the results of these studies are applicable for self-study language learning is still not fully known.

Moreover, it is not only school pupils who study L2. There are many language learners who do not participate in academic settings, and try to study by themselves. Entertainment CALL has a tremendous potential to provide language education for self-learners, with a high possibility of keeping them studying without giving up. This assumption is based on anecdotal evidence that proficient language speakers succeeded in their study through using foreign entertainment media, such as music, movies, and so forth. Therefore, language study with entertainment media seems to influence learners' motivation effectively, and as a result, they improve their language skills.

Based on the discussion above, this study investigates three different areas: motivational studies, CALL studies, and studies on entertainment. In other words, the present study takes a

multidisciplinary approach. The reason for applying this method is as follows. In the literature, some motivational theories in Second Language Acquisition (SLA) are given in a broader sense, while others exemplify potential and intention of motivational improvement through typical methods – music, movies, and CALL. However, these are theories and not multidisciplinary studies. Entertainment use in language learning has great potential to improve learners' motivation, incorporating language-learning methodological aspects. In particular, CALL can design content with great flexibility. Therefore, a cross-study of related multidisciplinary fields has the possibility to advance L2 motivational theories with entertainment influences, and CALL by effectively incorporating technological, pedagogical, and entertainment aspects.

The research question for this study is:

How would CALL, specifically for self-study use, be able to effectively and systematically motivate L2 learners with the application of entertainment factors?

This thesis discusses how to integrate entertainment factors into second language motivational theories especially for developing self-study purpose CALL systems.[2] Chapter 2 summarizes current second language motivational theories that have been developed in the field of SLA. In chapter 3, based on the motivational theories introduced in chapter 2, improvement of motivation through CALL is discussed. Chapter 4 describes how entertainment can be integrated in self-study CALL to improve motivation. Finally, chapter 5 concludes the thesis.

[2] Because of the research question, this study will not consider the issues in appropriateness of entertainment use in education.

Chapter 2

Motivational Theories in Second Language Acquisition

This chapter summarizes motivational theories in SLA. First, the paradigms of L2 motivational psychology studies and the definition of L2 motivation are introduced. Second, classical second language motivational theories, known as *integrative* and *instrumental motivation* are discussed. Third, other current second language motivational theories, based on extending classical second language motivational theories, are explained.

2.1. Overview

Motivation is a very common concept. Generally, motivation is regarded as important to starting or taking action, and is a concept used widely in a variety of situations. It is generally understood by many people, but it is also quite a complex concept to describe precisely. Therefore, scholars in several fields, such as psychology, sociology, and education, have tried to develop motivational theories, and have succeeded in describing more precise models of motivation through numerous studies (Dörnyei, 2001b).

Concerning L2 motivation, there are several definitions proposed by L2 motivation scholars. For instance, Gardner, Tremblay, and Masgoret (1997), defined motivation as that which "refers to the individual's attitudes, desires, and effort to learn the L2 and is measured by three scales: (a) Attitudes toward Learning the Language, (b) Desire to Learn the Language, and (c) Motivational Intensity" (p. 345). Dörnyei and Ottó (1998) proposed that L2 motivation "can be defined as the dynamically changing cumulative arousal in a person that initiates, directs, coordinates, amplifies, terminates, and evaluates the cognitive and motor processes whereby initial wishes and desires are selected, prioritised operationalised and

(successfully or unsuccessfully) acted out" (p. 64). These definitions might be seen as an overall framework for L2 motivation.

Over the last half century, L2 motivational studies have been transformed from a social approach to process-focused approaches based on the development of L2 motivational psychology and related fields. Dörnyei (2005) suggested three paradigms of L2 motivation research. The first paradigm is *the social psychological period* (1959-1990). An L2 motivation study was initiated in Canada, by the social psychologists Paul Lambert and Robert Gardner, and their conceptualization of L2 motivation is widely know as *integrative – instrumental motivation*[3]. *The cognitive-situated period* (1990s) is the second paradigm, in which many cognitive psychological theories in educational psychology were integrated into L2 motivation, such as *self-determination theory* and *task motivation*. In the third *process-oriented period* (2000-) paradigm, motivation is seen to be a more dynamic concept than a static one.

In the following sections, more details are given about each motivational theory. Firstly, integrative and instrumental motivation is introduced as the first well-known theory in L2 motivation; and secondly, more current motivational theories (i.e., theories proposed in the cognitive-situated period and the process-oriented period) are explained.

2.2. Integrative motivation and instrumental motivation

Gardener (as cited in Dörnyei, 2001a) argued that L2 learning is strongly influenced by the social situation, as social influences are not an essential factor in whether a student succeeds

[3] However, Dörnyei (1994, 2005) pointed out that the general representation of Gardners' motivation theory as the simple dichotomy of integrative/instrumental motivation is a misreading of his study – instrumental motivation is not a core concept of his theory and the theory describes more complicated dynamics of L2 motivation.

in learning the other subjects. This is a large difference between L2 learning and other subject learning. Second language learning is not only learning new information, as with other subjects, but also involves integrating a new culture into the learner's own language culture. Therefore, social influences must be considered as the central part of L2 learning. Based on this assumption, Gardner's motivation model focused on the motivational influence of the social situation.

Gardner's model may also be seen as the combination of two sub-types of motivation for explaining the factors influencing learners' motivation toward their further learning: integrative and instrumental motivation. Integrative motivation is the stimulus for learners' further language studies from their desire to communicate or interact with L2 people or culture (Gardner, Tremblay, & Masgoret, 1997). Instrumental motivation comprises the external influences that make learners study more, such as studying English to pass an entrance examination, or having adequate English ability to progress in one's career (Dörnyei, 2001b).

For a long time, integrative motivation was regarded as superior to instrumental motivation for predicting the success of second language learning (Gass & Selinker, 2001), because if students respected the target culture, they may read literature or practice the language, and thereby be able to improve their language skills (Cook, 2001). However, from another perspective, instrumental motivation is meaningful for the learner who has had limited access to the L2 culture, or foreign language settings (Oxford, 1996). For example, Dörnyei's (1990, as cited in Cook, 2001) study of the Canadian bilingual situation revealed that students tried to develop their language ability for the sake of their future careers. Therefore, both types of motivation can be regarded as being of equal importance (McGroarty, 2001), since both have

the effect of encouraging learners to study the target language.

2.3. Current theories of second language motivation

In this section, based on Dörnyei's (2001a) categorization of L2 motivational research trends, there are currently five approaches for L2 motivation. The five approaches are: the *socio-educational model*, *self-determination theory* in L2 motivation, L2 motivation from a *neurobiological* point of view, *task motivation*, and the *process-oriented approach*.

2.3.1. Socio-educational motivational model of L2 motivation

Gardner (1985, as cited in Tremblay & Gardner, 1995) has proposed a *Socio-educational model*. This model consists mainly of two class variables. One is *integrativeness* (integrative motivation); the other is *attitudes toward the learning situation*, which describes the attitude towards a learning component, such as a curriculum or instructor. Based on Gardner's 1985 model, Trembly and Gardner (1995) introduced an extended model that incorporated relevant motivational theories from educational psychology such as *goal theory* and *attribution theory*, which will be explained later.

Figure 2.1 represents the extended Socio-educational model. In this model, to achieve intended outcomes, there are three main factors working in the process: language attitudes, language dominance, and motivation. Language attitudes include integrativeness and attitudes toward the learning situation, as well as instrumental motivation. Language dominance refers to how much a student is exposed to L2 in a given setting, compared to L1. For instance, in an L2 instruction class, if the class is conducted entirely through L2 and L1 is not used, the language dominance in this class will be 100%. If L1 translation or explanation is used in the instruction, language dominance decreases.

This model further divides motivation into five subcategories: *goal salience*, *valence*, *self-efficacy*, *adaptive attributions* and *motivational behaviour*. Goal salience comes from *goal theory*, which predicts how the learner might achieve the goal of L2 acquisition based on their intended goals: if a learner does not have a specific goal, he or she will probably not succeed in L2 learning. This theory suggests that the learner who has a concrete goal (i.e. goal specificity) and frequently plans to achieve the goal (i.e. goal frequency) is more likely to succeed. Valence refers to perception of the task and its outcomes. In other words, learners who understand the value of the task, and feel aware of and enjoy their improvement, generally gain high motivation. Valence is defined by Tremblay and Gardner (1995) as the extent of desire to learn L2 and attitude towards learning L2.

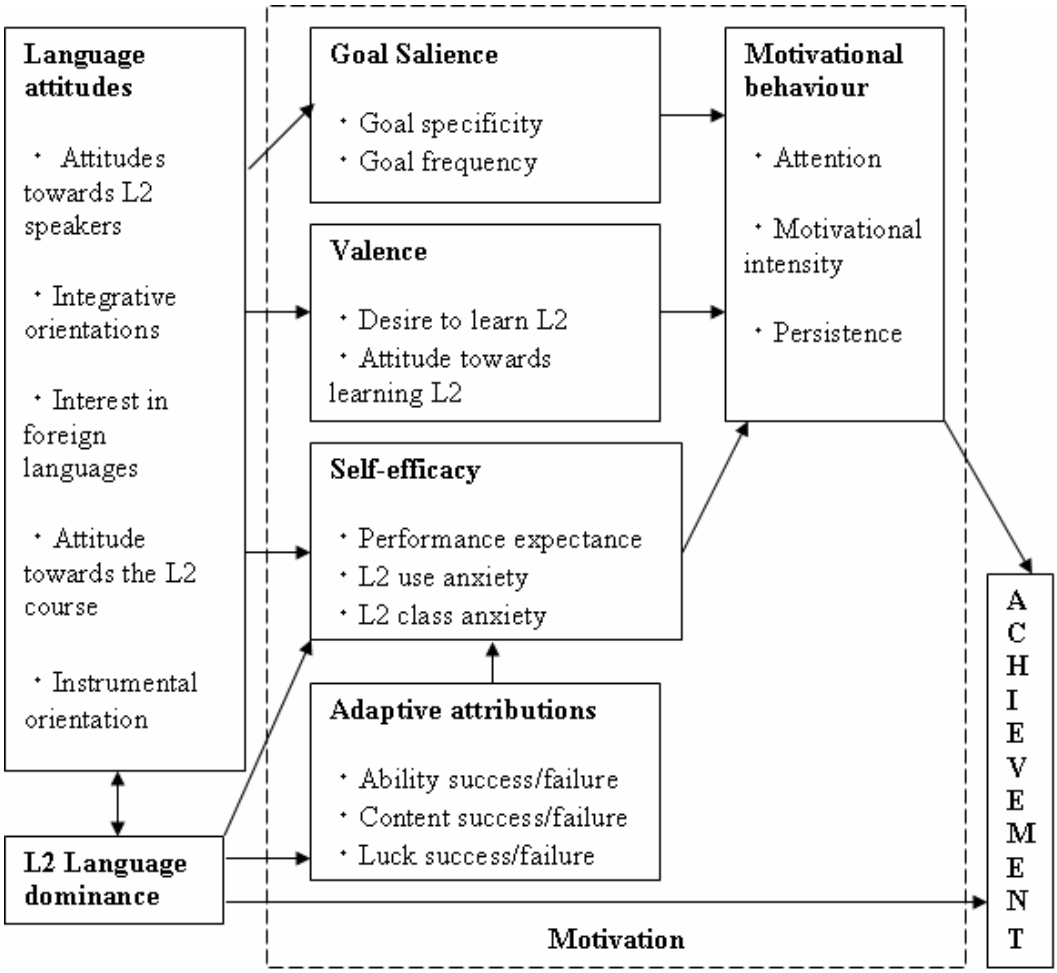


Figure 2.1. Tremblay and Gardner's (1995) model of L2 motivation (slightly modified after Dörnyei, 2001b, p. 54)

Self-efficacy, or in more common terms, expectancy, is self-evaluation of whether the learner can achieve the intended goals. Self-efficacy is affected not only by the assumption of how a learner might achieve their goals, but also by their anxiety when they use L2 or participate in an L2 class since the learner who strongly expects success generally feels little anxiety. Adaptive attributions indicate the degree of understanding why the outcomes arise. This component is the integration of *attribution theory* – if a learner perceives the reason for success or failure, and if it is controllable (for instance, the failure arises from insufficient effort) to predict further success, the learner can make further effort for its achievement. On the other hand, if the result is gained through luck, especially with failure, learners tends to give up since they do not feel that the result is any reflection of his or her efforts. This can be evaluated by three elements – learners' ability, content, and luck. These four motivational factors are only receptive or observable to the learner, but unobservable to the other people (therefore, Tremblay and Gardner (1995) called them *motivational antecedents*), whereas the other motivational factor, *motivational behaviour*, is observable, and can be separated into attention, motivational persistency, and persistence.

Figure 2.1 shows the relationship between the elements. The first relationship is that achievement is the result of influences of language dominance and motivation. It also indicates that language attitudes and language dominance are interrelated and that each of them affects motivation from a broader viewpoint. If the model is seen from a narrower viewpoint, goal salience and valence are affected by language attitudes. Adaptive attributions are related to language dominance, and this element, as well as language dominance and language attitudes, influences self-efficacy. Goal salience, valence, and self-efficacy – the three elements of motivational antecedents – connect directly into motivational behaviour.

2.3.2. Self-determination theory and second language motivation

Self-determination theory is known to be one of the most influential motivational theories in motivational psychology (Dörnyei, 2001a). This theory focuses on *intrinsic motivation* and *extrinsic motivation*. Briefly, *intrinsic motivation* describes a type of motivation in which one takes action for his or her own sake. On the other hand, *extrinsic motivation* indicates external stimuli as the motivation to do something (Dörnyei, 2001a; Noels, Pelletier, Clément, & Vallerand, 2003). For L2 motivation, the concept of self-determination theory provides a systematic framework on how to set L2 learning goals, and also how much autonomy an L2 teacher should provide for motivating an L2 learner (Noels *et al*, 2003). This section further explains self-determination theory for L2 motivation based on Noels *et al.* (2003), which consists of the concept of *intrinsic motivation*, *extrinsic motivation*, *amotivation*, and discussion about the relationship between these concepts and L2 learning.

Intrinsic motivation

Intrinsic motivation (IM) refers to a motivational influence for taking action that comes from pleasantness; for example, the learner feels enjoyment or satisfaction in an activity. Further, it is suggested that IM can be separated into three sub-categories: IM knowledge, IM accomplishment, and IM stimulation (Noels *et al*., 2003).

IM knowledge is the learners' perception that they can develop their knowledge with new findings through their investigation. IM accomplishment is motivational improvement when a learner feels highly satisfied about their action, such as task mastery or goal achievement. IM stimulation refers to the motivational influence from the property of the task, such as its aesthetics, interest, or excitement. Basically, these three types of IM are experienced in learners' own action-taking – from initiation to actual challenge (Noels *et al*., 2003).

Extrinsic motivation

Extrinsic motivation (EM), on the other hand, indicates the external motivating factors that make a learner take action – such as rewards for further action-taking or punishment if they do not take any action. Conceptually, EM can be separated into three more detailed categories based on the level of engagement in terms of self-determination by the learner: external regulation, introjected regulation, and identified regulation (Noels *et al*., 2003).

First, external regulation refers to external motivating sources, such as benefits and costs; hence, if learners study with only sources of external regulation and such sources are taken away from the learners, they will lose the reason to continue in their efforts to learn a language - a student studies hard to receive credit, and if he or she succeeds in doing so, the student may then cease studying. Introjected regulation refers to pressures that lead to learners' further actions; for instance, a student previews the material so as not to face an embarrassing situation if he or she makes a mistake during the class. As another example, a student studies to avoid feeling guilty if he or she neglects to study due to laziness. This motivation can be seen as internal motivation, but is still externally dependent motivation since the action is not of their own choice. Identified regulation comes from external valuable reasons that learners find for taking action. An example is the engagement in oral practice by a learner from the learner's perception of importance of L2 fluency for educational development. This type of extrinsic motivation can be said to be the most self-determined one among the three (Noels *et al*., 2003).

Amotivation

Amotivation leads to motivational transfer when learners cannot find any relationship between their actions and the resulting consequences. Since the end result is out of their

control, they tend to lose their motivation to continue taking the action (Noels *et al*., 2003). Noels, Clément and Pelletier (1999) also described amotivation as a similar concept to *learned helplessness*. Learned helplessness is the state in which learners feel no prospect for their desired success – they simply think the achievement is impossible regardless of action or effort – from their experience in their continuous challenges without success; therefore, re-motivating is very difficult if learners feel helpless in their actions (Dörnyei, 1994). This uncontrollable situation deprives learners of further motivation and leads them to quit the action (Noels *et al*., 1999)

Self-determination theory and L2 learning

Noels *et al*. (2003) hypothesized that the application of self-determination theory would make it possible to predict L2 learning outcomes. As evidence, they introduced several studies: Ramage (1990), Tachibana, Matsukawa, and Zhong (1996), and Ehrman (1996). Ramage's study reported that intrinsically motivated students continued to study further than extrinsically motivated students (those who were studying to earn credit). The second study investigated Japanese English learners, with the results showing that the more a learner had high intrinsic motivation, the more the learner aimed to achieve high scores, and actually met their objectives. In other words, highly intrinsically motivated learners received good scores. The study by Ehrman also indicated a positive correlation between the level of intrinsic motivation and their L2 achievement. Noels *et al*. (2003) argued that the outcomes of these studies are rational evidence for the appropriateness of the application of self-determination theory for L2 learning, and the evidences also support the systematic prediction of L2 outcomes from the learners' level of intrinsic/extrinsic motivation.

Learner autonomy and teacher control

To consider the relationship between IM/EM and learner autonomy (the extent to which a learner controls the learning), Noels, Clément, and Pelletier (1999) observed how teachers' communication styles influenced learners. It appeared that students who received autonomy and adequate informative feedback from the teacher improved IM. That is, if students feel autonomous in their language learning and use, they feel enjoyment that leads them to further effort; resulting in the student improving their ability to lessen anxiety in the classroom. On the other hand, motivation through expectation of rewards or pressure will not last long; students will stop their study temporarily to achieve short-term goals. In terms of amotivation, it decreased students' efforts and as a result increased students' classroom anxiety. This discussion showed the relationship between motivational types and the longevity of motivation. Practically, the program that was conducted under high student autonomy has the potential to improve students' ability and also indicated the importance of an L2 learning goal that gives motivational influence.

IM/EM and integrative/instrumental motivation

The study of Noels *et al*. (2003) investigated the relationship between the IM/EM concept and the concept of integrative/instrumental motivation (these concepts are similar, but not equal). In their study, they investigated four types of orientation (suggested by Clément and Kruidenier (1983, as cited in Noels *et al*., 2003)), that all learners generally showed: travel, friendship, knowledge, and instrumental orientation. Based on their investigation, Noels *et al*. (2003) said that there is a correlation between instrumental orientation and EM (external regulation), and between travel, friendship, and knowledge orientation and IM.

The results also indicate that travel, friendship and knowledge orientation are related to autonomy or freedom of choice in terms of the ability to manipulate language. In other words,

these orientations are fulfilled if learners have enough control in their language use. Therefore, these have a close correlation with IM. Instrumental orientation – EM correlation can be explained in that instrumental orientation – learning the language for external reward, is not relevant to freedom of choice.

2.3.3. Neurobiological approach

Schumann (2001a, 2001b) discussed second language motivation from a neurobiological perspective. From this perspective, language learning is *foraging*, using the same neurobiological mechanism as foraging for food. To obtain the intended outcomes, humans' incentive-motive transferred relevant motor activities, such as searching for information in a seemingly available environment (Schumann, 2001b). More precisely, he introduced the functions of parts of the brain which related to motivational mechanisms and then discussed these functions and their relationship to language learning motivation in terms of five appraisal dimensions. As follows, Schumann introduced examples to show the application of this concept based on brain function (Schumann, 2001a). Among his explanations, this section reviews the last two parts – the concept of five appraisal-dimensions and its examples in L2 learning – to understand the framework of the neurological approach of L2 motivation.

*Five appraisal dimension***s**

Concerning neurobiological function in second language learning, Schuman (2001a) indicates five appraisal dimensions that affect second language motivation: *novelty*, *pleasantness*, *goal or need significance*, *coping ability*, and *compatibility with self and social image*. *Novelty* refers to newness of the stimulators. *Pleasantness* is how the experience is enjoyable or attractive. *Goal or need significance* is the judgment of whether responding the stimuli are worthwhile. *Coping ability* (or coping potential) means recognition (or even just expectation)

of sufficient ability to respond to stimulus effectively. *Compatibility with self and social image* is perception as to how these stimuli are based on self image/concept and social norms.

Examples of the five appraisals in second language learning

As examples of the application of five appraisal dimensions for second language motivation, Schumann (2001) assessed four questions in Gardner's (1985) *Attitude and Motivation Test Battery* in terms of appraisals. As a question which evaluates *pleasantness*, Schuman quoted "French Canadians add a distinctive flavour to Canadian culture" (Gardner, 1985, p. 178), since this question assesses cultural attractiveness. The second quotation, "Studying French can be important to me because it will allow me to meet and converse with more varied people" (Gardner, 1985, p. 179) shows the measurement of *goal significance* because the question asks how necessary is the communicative goal for the learner. "Studying French can be important for me because other people will respect me more if I have a knowledge of a foreign language" (Gardner, 1985, p. 179) indicates the assessment of *goal relevance* and *compatibility with self and social image*. In this case, the goal is to acquire foreign language knowledge, and achievement of this goal will lead to others' respect, fulfilling the ideal image of self. As the last example, Schumann chose "I get nervous and confused when I am speaking in my French class" (Gardner, 1985, p. 179) as it measures the extent of *coping potential*, *compatibility with self and social image*, and *pleasantness*. The students are concerned about their ability to cope with a new situation, such as French class or speaking in French, and imagine themselves and their fellows in class. These examples show the relation between the single concept or combination of five appraisals and second language motivation.

2.3.4. Trait/State motivation and task motivation

In L2 motivation studies, conceptualization of motivational transfer in a certain task is a

useful approach since it can divide complex, long-term motivation into segments (Dörnyei, 2003). This type of motivational framing is called *task motivation*. The basis of task motivation comprises the differences of motivational influence, as well as learning itself, for the different tasks, since the task decides what and how students experience and learn (Julkunen, 2001). For the development of task motivation, Gardner's (1995) *state* and *trait motivation* is the predecessor of conceptualization (Kormos & Dörnyei, 2004). Therefore, in this section, Gardner's (1995) concept of state and trait motivation is introduced first, followed by task motivation.

Trait motivation and state motivation

Tremblay, Goldberg, and Gardner (1995) proposed *trait* and *state motivation* in L2 learning, and also investigated the correlation between them. Trait motivation is relatively stable motivation. The key important factors are persistence, attention, interest in foreign languages, and attitude toward learning languages. State motivation refers to situational motivation at a certain point. It can be observed by study time, or the ratio of learning time to outcomes. Their study indicated that trait motivation relates to state motivation, which influences the learning outcomes (but has no direct relation to learning).

This model gives a useful picture to understand learners' situational motivation with a clear distinction between the two types of motivation; however, this model also describes motivation as a static concept, whereas, in reality, learners' motivation changes dynamically over time (Kormos & Dörnyei, 2004). Language acquisition is long-term work, so long-term stable (trait) motivation is a key factor for success, but trait motivation is also the result of a continuum of change of state motivation. In other words, in long-term learning, motivation changes, as well as learners' efforts and attitudes towards language learning, based on their

experiences in learning. Therefore, long-term success is based on a continuum of successes in short-term learning (Gass & Selinker, 2001).

Task motivation

Following the theoretical problem of trait/state motivational framing, Dörnyei (2003) proposed a *task processing system* that expresses a more dynamic picture of L2 motivation. This system consists of three components: *task execution*, *appraisal*, and *action control*.

Task execution is the degree to which learners take action based on the L2 learning plan (which learners are sometimes given by their teacher, or at other times create by themselves). Appraisal refers to the response to outside stimuli that affects learners' further engagement with learning outcomes (this component comes from Schumann's (2001) *Five appraisal dimensions*, see 2.3.3). Action control means an internal mechanism that reinforces self-regulation toward further action. These three components are interrelated (Dörnyei, 2003, see figure 2.2).

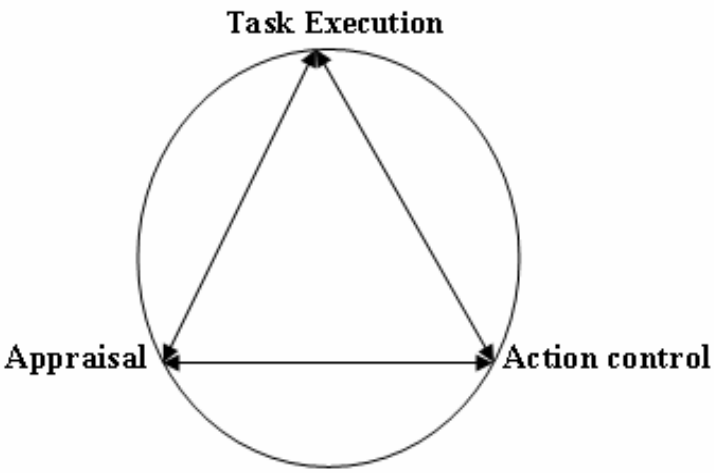


Figure 2.2. Dörnyei's task processing system model (Dörnyei, 2003, p. 15)

Furthermore, task motivation has connection with *flow theory* (Dörnyei, 2005). Flow theory indicates that learners can maximize their learning effect when they meet *flow experience*,

which refers to the learners' experiences during a task which requires a good balance of challenge and skills, as well as suitability to their interest, control, and attention (Egbert, 2003). For SLA, it is hypothesized that flow experiences can improve language acquisition and Figure 2.3 visualizes the relationship between flow experience and language acquisition. This shows that appropriate tasks based on the learner's skills create flow experience. The flow experience further leads to performance and this can also direct the next flow experience through the improvement of skills (Egbert, 2003).

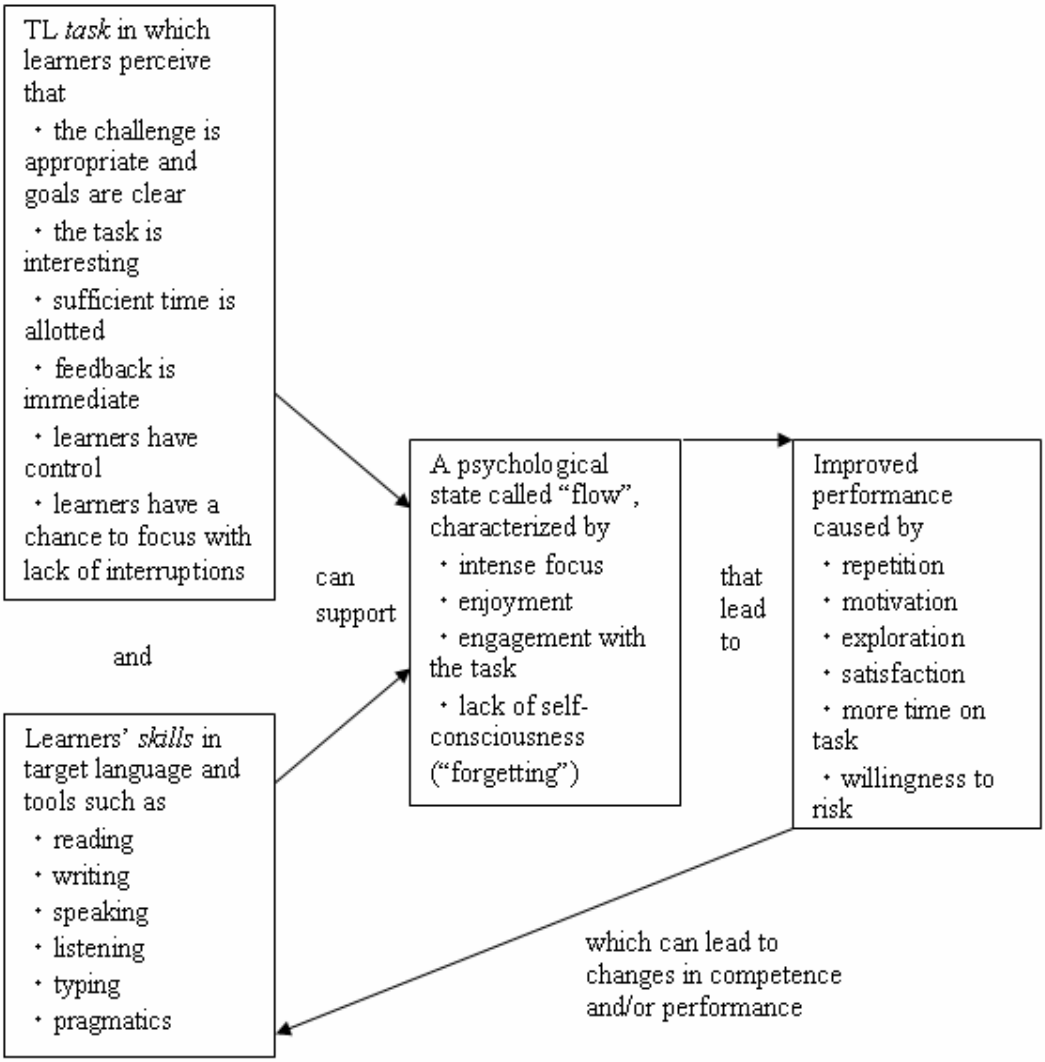


Figure 2.3. Model of the relationship between flow and language acquisition (Egbert, 2003, p. 502)

2.3.5. Process-oriented model

For the challenge of motivational transfer in a time paradigm (Dörnyei, 2000), Dörnyei and

Ottó (1998) proposed a *process model* of L2 motivation. This model shows motivational change as separated into three continuous phases: *pre-actional phase*, *actional phase*, and *post-actional phase*, each of which has typical functions influencing motivational change during the learning process.

Pre-actional phase

The pre-actional phase can be called *choice motivation* (Dörnyei, 2003), referring to the time when a learner chooses and decides what actions he or she will take. Figure 2.4 shows the model of the pre-actional phase. This phase is broken down into three sub processes – goal setting, intention formation, and the initiation of intention enactment – i.e. the learner decides whether they will take action or not. Goal setting is the first step towards action, but the goal itself does not activate the learner's action, so to activate an action, the learner needs to form a clear intention based on the goal. After forming their intention, the action will be activated when the learner has fulfilled their own conditions for taking action, such as realizing the prospect of achieving the goal, having available time and resources to make it possible to take action (Dörnyei & Ottó 1998, more detail, see figure 2.4).

Actional phase

The actional phase is *executive motivation* (Dörnyei, 2003), motivational movement when the learner is actually taking action (Figure 2.5 describes it). During this phase, the motivational process is advanced based on three processes – subtask generation and implementation, a complex ongoing appraisal process, and the application of a variety of action-control mechanisms. The first process refers to how learning is intentionally processed based on the plan formed in the pre-actional phase. The next describes the influence of the learner's reception of various stimuli from the environment during the advancement of the action

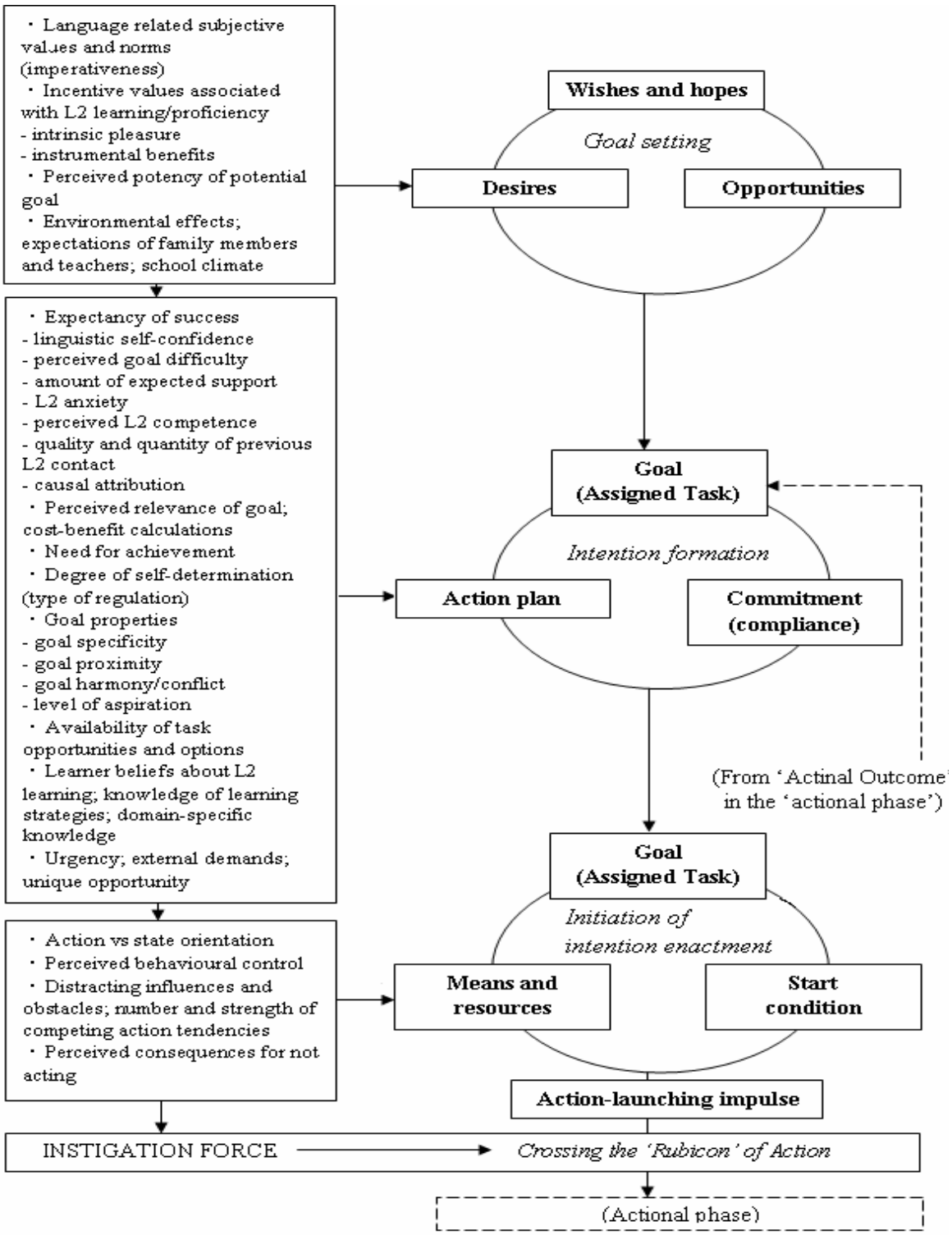


Figure 2.4. Pre-actional phase in process model of L2 motivation (slightly modified after Dörnyei, 2001b, p. 86)

process. The final process is controlled by learner's self-regulation based on their conscious or unconscious use of knowledge or strategies (Dörnyei & Ottó 1998, more detail, see figure 2.5).

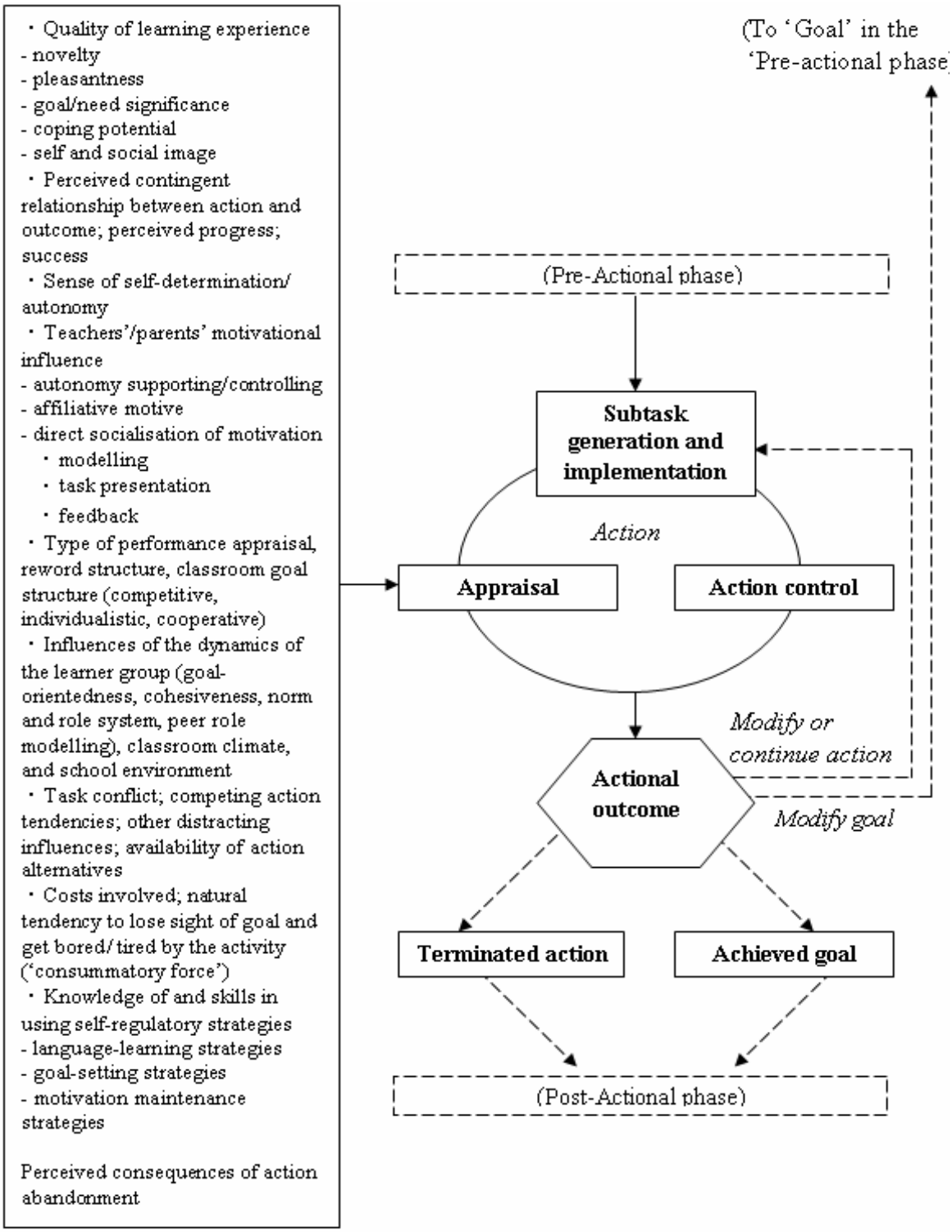


Figure 2.5. Actional phase in process model of L2 motivation (slightly modified after Dörnyei, 2001b, p. 86)

Post-actional phase

During the post-actional phase, a learner evaluates the process based on whether the

objectives of the action are achieved or if the action has not been completed. Therefore, this motivation is regarded as *motivational retrospective* (Dörnyei, 2003). The experiences during this phase will strongly influence the learner's further action. If the learner feels that the action has been a success, he or she may take further action, if not, they may not (Dörnyei & Ottó, 1998, more detail, see figure 2.6).

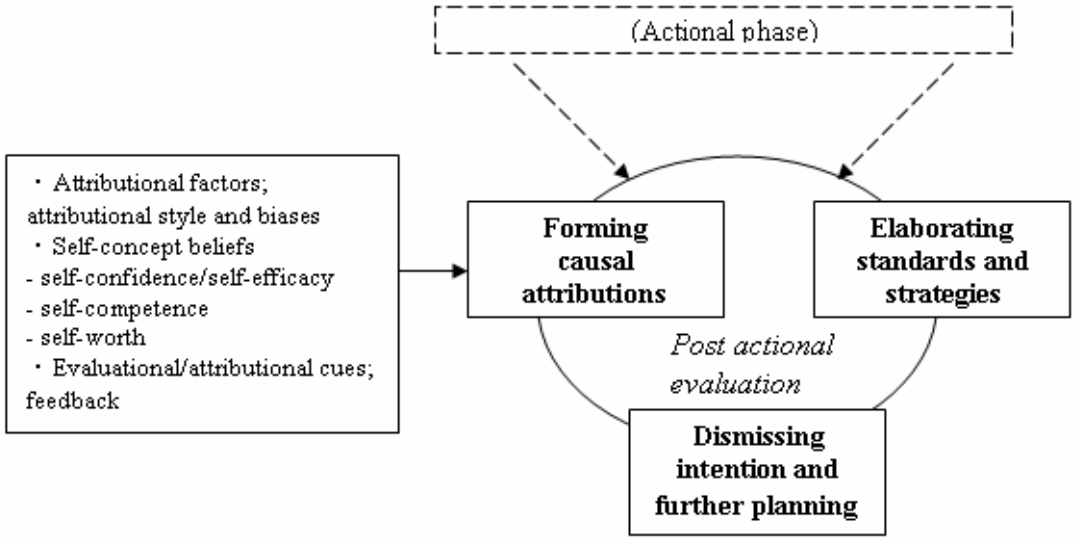


Figure 2.6. Post-actional phase in process model of L2 motivation (slightly modified after Dörnyei, 2001b, p. 86)

2.4. Summary and further implications

This chapter introduces several motivational theories – from the traditional *integrative/instrumental motivation* dichotomy to more current motivational theories: the *socio-educational model*, *self-regulation theory in L2 motivation*, *neurobiological approach of L2 motivation*, *task motivation*, and the *process model of L2 motivation*. Each theory does not stand alone but is interrelated, and incorporates some characteristics of the others. In this chapter, the integration of motivational theories is not attempted; rather, these theories are considered separately to describe motivational transfer based on different viewpoints and in the next chapter, each motivational theory is used to evaluate how CALL affects learners' motivation.

Chapter 3

Motivational Stimulus of CALL Application

This chapter synthesises the L2 motivational theories introduced in the previous chapter and the results of CALL motivation studies that were conducted through classroom CALL application. From this approach, this chapter attempts to reveal how classroom CALL applications influence learners' L2 motivation. Furthermore, how self-study CALL can influence motivation is discussed to consider effective motivating factors for self-study language learners.

3.1. Motivational studies in CALL

This section introduces several CALL studies that focused on motivational improvement. In the CALL field, there are very few studies that directly investigate motivational improvement as a subject matter (based on the author's investigation, there are only six published studies). Therefore, this section discusses these six studies to examine the framework of motivational studies on CALL. The following discussion is based on the chronological order of the publication dates of the six studies.

Study by Beauvois

Beauvois (1995) observed computer mediated conversation classes to examine students' attitude, learning process, relationships with other classmates and instructors, and improvement of language skills. Forty-one students participated in a five week French course, participating in computer lab sessions once a week as part of the curriculum, in addition to general classroom sessions. Students were asked to preview a textbook, and discuss its content in two different classroom settings: a face-to-face classroom setting and a computer

network conversational setting. At the end of the semester, students answered the post-test questionnaire, which consisted of questions about attitudes towards stress, network participation, learning, and group interaction to survey students' self-evaluation of their performance in normal class sessions and computer lab sessions, and attitudes towards each instructional setting. In addition, students were interviewed to provide more detail about the course, especially about differences between the computer classroom setting and the non-computer classroom setting.

Beauvois found that students felt less anxious in the computer lab sessions compared to oral interaction in a normal classroom, especially if students had individual personality differences such as high levels of shyness. The results showed that students were more communicative (i.e. created more output) in the computer lab sessions. It was also found that positive attitudes were enhanced since students could control their output more readily during electronic communication. In addition, students felt that they were able to improve their grammatical competence and reading comprehension because their process of recognition of the target language gradually became more automatic. Beauvois further interpreted this result – as to whether the computer-network-mediated classroom was superior to the face-to-face classroom – as being inconclusive because the result is based on only one experimental setting, the network mediated classroom which enhanced the students' positive attitudes towards communication.

Study by Warschauer

Warschauer (1996) researched how learners showed their motivation when using computers. He surveyed 167 ESL and EFL students in academic writing classes within twelve universities in the U.S., Hong Kong, and Taiwan. Several teachers instructed these classes

and computers were used for communication and writing. To survey the motivational factor, teachers asked students to answer a questionnaire during one normal class period. The questionnaire asked about the students' feelings concerning the use of computers in language learning, the use of a word processor, or computer mediated interpersonal communication. This section also asked about their general feelings concerning computer use for language learning. In the analysis, several elements were assessed: students' responses towards computers (positive/negative), the categorization of questions, effect of personal background, and students' different perspectives on Computer Mediated Communication (CMC) based on background and the classes they attended.

Warschauer gave three conclusions. Firstly, students showed positive attitudes towards using computers in writing and communication, regardless of their background (including computer skills), within both ESL/EFL classes. Secondly, the factors that influenced students' motivation positively were their beliefs in the communicative advantages, control of learning context, and learning effectiveness. And thirdly, teachers could increase students' motivation using computers – especially when they carefully plan the activities and the aims of courses.

Study by García and Arias

García and Arias (2000) compared paper-based tests and computer-based tests in terms of motivation and learning outcomes. There were 60 L2 learners at the Extremadura University (Spain) as informants, of which nine were elementary, 36 were lower intermediate, and 15 were intermediate. In the research, a pre-test and post-test were conducted. The participants were divided into two groups: the students in one group take print-oriented multiple-choice test, and those in the other group take the computer-oriented one. The print-oriented multiple-choice group took a paper-based test. Students were able to get feedback from their teacher

and were allowed to use (paper-based) dictionaries, a grammar book, and a reference or exercise book to check their answers after they received their result. The computer-oriented multiple-choice test had similar arrangements to the written test. However, students received feedback by computer, and also got references from computer software and an internet site. The test asked questions relating to the following linguistic knowledge: some grammatical (syntactic) aspects, vocabulary, and pronunciation. For validity reasons, students were separated into two groups, and took the same type of test in the pre/post test. Tests were conducted over 90 minutes. In the first 15 minutes, the students took the test, then the answers were given by the teacher, after which students used the remaining time to expand their knowledge based on their interests.

The results showed that students used references more under computer-oriented settings than under print-oriented settings. In addition, students who took the computer multiple-choice test took extra exercises compared to students who took the print-based test. García considered that this outcome was the result of interactivity and accessibility of information from the computer-based environment that made students motivated to get more consultation, which was evidence that CALL worked better in terms of motivation.

Study by Appel and Gilabert

E-mail tandem language learning was used as a research setting to measure motivation by Appel and Gilabert (2002). E-mail tandem language learning is a learning style where there are two groups in separate places. In this case, there were 40 students in Barcelona and Dublin (20 students in each city, and the Dublin group were learning Spanish and the Barcelona group were learning English). The same lecture was conducted in both classes, and students had the same syllabus and final exam. One student from Barcelona and one from

Dublin worked together as a pair (a tandem partner is a native speaker of the L2s) and tried to complete four tasks: a film review, a town investigation, a presentation about current news, and an analysis of stereotypes appearing in TV advertising. Data was collected using several methods in this research: implementing a pre-course survey (gathering general information such as proficiency in the target language and computer skills), recording all tandem exchanges, asking students to submit feedback about four tasks, and analysing the outcomes of the tasks.

The outcomes inferred several factors which affect motivation. First, the authors thought that the computer-mediated environment itself influenced learners' motivation; in particular, digital materials (video/audio) themselves motivated students. As evidence, students were surprised when presented with these materials. In regard to computer environmental factors, the visibility of the outcome of students' work also influenced their motivation. Other than these digital environmental factors, the tasks gave students motivation through the authenticity of language use and meaningful interaction with others, appropriateness of the complexity of tasks (intellectual satisfaction in doing the tasks), and collaboration with others.

Study by Jarrell and Freiermuth

Jarrell and Freiermuth (2005) investigated how Internet chat in language classrooms stimulated learners' motivation, especially their willingness to communicate. They conducted this research by observing 69 students (26 first year students and 43 second year students) at a women's university in Japan. Students were divided into two large groups and each group was separated into smaller groups during the class for discussion. In the first week, face-to-face conversation was held in one group, and computer mediated conversation in the other. Both groups were given the same topics for conversation. In the second week, the settings

were reversed – the group that held face-to-face conversation in week one participated in computer mediated conversation in week two. After experiencing the two different types of conversational style, students answered a questionnaire that asked which style they favoured as a conversational setting.

After this research, Jarrell and Freiermuth received 39 answers from the students (this also means 40 students did not answer it). The results of the analysis showed that most of the students preferred the Internet chat based conversation for several reasons: internet chat provided time to consider, it kept anonymity (students did not have to be concerned with the senior/junior relationship), it prolonged communication between students, and it made students feel more relaxed than face to face. Therefore, Internet chat stimulates students' motivation in a classroom. The result also implies that since an Internet chat environment supported their production of output and the improvement of students' Willingness to Communicate (WTC), which refers to the learners' temporal desire to use L2 based on the given situation with more triatic conditions (such as learners' character and social situations) [4].

Study by Chang

Chang (2005) not only studied general motivational factors on CALL, but also studied the effect of web-based CALL learning and self-regulated learning strategies. There were 28 vocational university students (two males and 26 females) participating in this study. The survey subjects were students participating in a "2-credit-hour class" (p. 221) that consisted of discussions, presentations, and group projects conducted through web-based instruction and participation. Materials were provided through the web. During the semester, the students were also required to write a learning journal – recording their study time and place, and

[4] For more details, see MacIntyre, Clément, Dörnyei, & Noels (1998).

writing their perspective on learning (the latter being optional). To measure how the web based course influenced students' motivation and self-regulated learning strategies, Chang implemented the Motivated Strategies for Learning Questionnaire (MSLQ) at the beginning and end of semester, and compared the scores that students gave. The MSLQ consists of a motivation section and a learning strategy section, and these sections were further divided into several sub scales[5].

From the MSLQ analysis, the web-based class improved students' motivation and self-regulated learning strategies. There were four research questions measured by MSLQ: intrinsic goal orientation, task value, control of learning beliefs, and self-efficacy. Comparing mean scores of tests from the beginning and end of the semester, the scores increased significantly. Therefore, Chang concluded that the context of the course - that students should keep their own records of learning, keeping a journal, intended for self observation and evaluation – improved students' self-regulatory strategies, and students' motivational perception was also improved because of their understanding of their improvement and responsibility for learning through the class.

3.2. Motivational influences of CALL applications

As shown by the previous section, there are six motivational research studies written through the decade. Based on these results, this section applies them to the motivational theories summarized in chapter 2, and discusses how CALL improves L2 motivation and what kind of aspects support it.

[5] For details about MSLQ, see Chang (2005).

3.2.1. The premises of the discussion

Because of the limited number of published studies that address CALL applications with special consideration of motivational transfers, the research designs and the used methodological/technological aspects that were used in the collection are basically not coherent: some studies investigated communication classes through computer medium settings, and others observed the students' motivation in their study and test taking in computer assisted environments. Therefore, referring to the data from the studies, some argument could be initiated. One possible argument is that the study from a decade ago is obsolete with the rapid advancement of computer technologies. Moreover, the underlying settings of these studies vary so nothing can be deduced through analysing them. However, studies under non-unified applicational settings over a long period of time also have the advantage of enabling the finding of a universal trend of motivational improvement through computer application in language learning. This means that the motivational stimulus found in different contexts can be seen as a general tendency of motivational improvement that CALL can systematically manipulate. It is also assumed that the similar tendency in a current study and a study conducted ten years ago indicates general trends that are not influenced by shapes of technologies or technological innovation.

3.2.2 Procedure of discussion

A brief procedure as to how to advance the discussion is shown below. Firstly, the data from each study is fitted to an aspect of each theory. After this application is implemented to all data from the studies, the factors from CALL applications and aspects from L2 motivation studies are compared. The following explains the details of procedure.

Treatment of the motivation theories

The previous chapter introduced previous integrative or instrumental motivational categorizations of L2 motivation, and more current L2 motivation theories that focus on the various aspects of L2 motivation. Basically, since the previous motivational theories are already integrated in the current motivational theories, this section will only focus on the five current motivational theories as a model of L2 motivation.

In terms of the current motivation theories, this study treats them as five different models – socio-educational model, self-determination theory, task motivation model including five appraisals dimension based on Dörnyei's (2003) task processing system model, flow theory, and process-oriented model.

with regard to socio-educational model and self-determination theory, this study uses them in the same way as the original model. In addition, to consider what kind of motivational transfer each theory describes, the socio-educational model expresses motivational condition before the action to achievement; hence, it is reasonable that the socio-educational model is suitable to frame motivational transfer during a certain L2 task (it can be one classroom activity or one semester curriculum). In other words, the socio-educational model is suitable to describe a macro dynamic of L2 motivation through a certain period of time. On the other hand, the self-determination theory suggests the categorisation of motivational aspects, not emphasized on the function of motivational movement over a long time, so this model can explain L2 motivation over a short period of time. In other words, this model describes micro level of motivational mechanism rather than macro level or the dynamic function of L2 motivation.

The task execution system and flow theory are L2 motivational theories that depict motivational transfer through the task. Further, the task execution system takes into account Schumann's (2001a, 2001b) neurobiological approach for L2 motivation – five appraisals dimensions – therefore, this model can be regarded as the model that describes the reaction of the stimuli in a single moment of time, as well as dynamic mechanisms of motivational change in a task. To emphasize the stimuli in the single moment, the interrelation between five appraisals, task execution, and action control can be separated as continuous separated stimuli. This means seven stimuli (five appraisals with task execution and action control) can influence L2 motivation. In other word, each one of three aspects (i.e., appraisals, action control, or task execution) lead to the other two in the task (e.g., appraisals lead to action control and task execution), so focusing on a single moment, the stimuli can be divided into the stimuli arousing appraisals, or the stimuli enhancing task execution or action control. During the dynamic process of motivational change, each stimulus leads to the other aspects of stimuli. Based on this consideration, this model is used to analyse micro level of L2 motivation.

On the other hand, the flow theory is used for analysing dynamic mechanisms of L2 motivation in the task. Basically, this theory describes the motivational movement as the continuous process of *perception of task*, *flow*, and *improved performance*. In this study, this theory is used to analyse how CALL applications connect task-flow transfer or improved performance. Task and flow is treated as a set of elements in this study since the data in the results already shows effective improvement of L2 motivation by the suggested factors; in other words, the motivating factors suggested by the data highly possibly lead flow if the factors describe some procedure of the task; otherwise, the participants did not show any effective motivational improvement from them. Therefore, this study focuses on how

task/flow and improved performance are related in the procedure of the tasks.

The process-oriented model is applied with no adjustment for the purpose of this study, however, the dynamic process of motivational transfer is emphasized on more than each factor that affects motivation in a certain process. Therefore, the macro level of L2 motivation movement can be analysed by the process-oriented model.

In brief, this study addresses the motivational theories as five different frameworks and the models are divided into two categories for the purpose of analysis (based on the original theories). The categorisation is as follows:

Frameworks observing macro dynamics (long time change) of L2 motivation

- Socio-educational model
- Flow/Task and performance dynamics
- Process-oriented model

Frameworks investigating micro level of L2 motivation

- Self-determination theory
- Task motivation with five appraisals

The treatment of the data from the research studies

The data from the research studies are mainly given by two types of analysis - quantitative studies and qualitative studies. Quantitative research studies (i.e. studies by Beauvois (1995), Warschauer (1996), and Chang (2005)) provide the data as a form of numeric number or statistic value. Qualitative research studies (i.e. studies by García and Arias (2000), Appel and Gilabert (2002), Jarrell and Freiermuth (2005)), on the other hand, give the result as the interpretation of observed phenomena as the suggestion of what motivational aspects influence the learners. For this reason, this study treats the data on two levels – strong factors

and possible factors – in order to reflect the significance of factors that the studies mention in their analytical frameworks.

The studies by Beauvois (1995), Warschauer (1996), and Chang (2005) show the motivational level as a numeric number. In particular, the Warschauer (1996), and Chang (2005) studies considered the significance of numeric data based on their analysis. In this study, the numeric data that are regarded as significant are treated as strong factors that can influence motivational improvement through CALL effectively. In terms of Beauvois's (1995) study, there is no mention about how significant the data is. However, the data shows the different effectiveness of each factor as a percentage of participants' reaction. To reflect on this difference, this study regards factors as strong factors if more than 70% of participants agree they were motivated by them. Since the original study depends on the perception of the participants, the significant number can be led by a general consensus formation rule: 2/3 of agreements can be regarded as the consensus of the group.

The rest of the data are treated as possible factors that could improve L2 motivation to a certain extent, since there are only a limited number of observed items through studies, it is more useful to consider these as possible motivating factors instead of just discarding these elements in analysis. As for studies by García and Arias (2000), Appel and Gilabert (2002), and Jarrell and Freiermuth (2005), these studies do not provide exact motivating factors. Therefore, the motivating factors are picked up and they are used as possible factors. Even if there is no numeric evidence, the factors from the studies are important.

Method to fit in the theories

For the purpose of effective discussion, each item from each study is fitted to a component

from each theory. Although some items can be interpreted as motivating factors related to several categories on the theories, this study will focus on the most influential aspect in each item. That is, this study treats the items and a component in each theory in a one-to-one correspondence.

Data analysis

After interpreting each item into each aspect of each of the motivational theories, this study analyses how each aspect is interrelated among the theories. The first step is comparison between the theories addressing macro-level L2 motivational movement. Then micro-level motivational transfer is considered, and finally, how motivational changes in a single moment influence dynamic mechanisms of motivational change over a long period is discussed. As in the final process, not only is the interrelation of the theories considered, but also what concrete criteria can influence motivational improvement is investigated.

3.2.3. Data application

Based on the definitions of each theory, each item from each of the studies is applied to each model to observe how CALL affects L2 motivation. The studies by Beauvois (1995), Warschauer (1996), and Chang (2005) used their own questionnaires to investigate L2 motivation, and this study has used the same items for analysis. However, based on the discussions of original studies, the data that do not support the advantages of CALL application have been omitted from this study. In Warschauer's study, there were originally thirty items to evaluate L2 motivation. Among the thirty items, one item shows a negative outcome, which is "If I have a question or comment, I would rather contact my teacher in person than by e-mail" (Warschauer, 1996, p. 14). Regarding this issue, Warschauer (1996) explained that since students tend to score higher for any questions they may ask and, in his

experience, there is much evidence that students show preference for communication via computer, this negative outcome is not essential to evaluate the students' attitude. This study will therefore only take 29 items into consideration. In addition, Chang's study also has one non-supportive datum; hence this datum is omitted from this study. All the items from the other studies were used, and Appendix A, B, and C shows the details of items.

The studies by García and Arias (2000), Appel and Gilabert (2002), Jarrell and Freiermuth (2005) do not set items to evaluate motivation directly; therefore, this present study sets items from the results of the above studies for further analysis.

García and Arias's study suggests the data showing the different use of references and results of tests. With the consideration of the property of each data set, this study set four items for further analysis: Easy access to the references for essential information (Grammar/Vocabulary/Listening), Easy access to the references for extra information (Culture), Easy continuous practices, and Achievement. In terms of the first two, this study provides the improvement of the frequent use of references through study with CALL. Originally, García and Arias's study shows the data of how students use references of grammar, vocabulary, listening data, and culture (provided by an encyclopedia). From the usage, these types of references can be separated into two categories based on the information's properties. The information about grammar, vocabulary, and listening data is essential in order to understand content directly and to continue studying, so this was set as one category. The other category is information about culture. This information may be seen as rather inessential information to study. In other words, even without this information, learners can understand the content. Therefore, this reference is categorized as extra information and set as a different category from grammar, vocabulary, and listing data

references. Regarding the other two – Easy continuous practices, and Achievement – the data shows that students in the CALL environment practice more and receive higher scores in all types of tests, therefore the CALL environment helps them to improve, hence these items are also used as supportive evidence in this study.

From Appel and Gilabert's (2002) study, there are 14 items that can positively influence learners' motivation:

- Interesting Topic
- Appropriate control (proper restriction of freedom)
- Authenticity
- Degree of engagement in tasks
- Degree of decision-making involvement
- Appropriate decision-making
- Level of decision-making (experience/maturity)
- Knowledge of topic
- Intellectually challenging task
- Computer medium environment
- Connection with other subjects
- Outcome
- Collaboration
- Tandem exchange with native speakers.

The first 13 items come from Appel and Gilabert's discussion regarding the apparent result, and they mention these as the motivating factors that the result of the study shows as evidence. The last factor comes from an underlying setting, and this can also be a motivating factor since discussion with a native speaker differs from discussion among non-native speakers.

Jarrell and Freiermuth's (2005) study suggests four motivating factors: L2 use supportive environment, Anonymity, Control, and Relaxation. In this study, CALL mediated communication environment supports L2 communication, and anonymity and output control in written conversation further aided L2 communication. In addition, under such conditions,

the student felt relaxed and this is a positive aspect of the CALL environment. There are advantages to the CALL environment and these may be regarded as supportive evidence that systematically improves L2 motivation. This study also mentioned the improvement of students' WTC, but the improvement of WTC can be regarded as a function of the motivating factors shown previously, so it is not treated as a single independent item for further analysis.

Under these conditions, the data application is conducted, and each item is fitted to each aspect of the L2 motivational theories. For example, Beauvois's (1995) first item "Students monitor use of grammar to express themselves" can be regarded as follows:

- Achievement (socio-educational model)
- IM-knowledge (self-determination theory)
- Pleasantness (task motivation)
- Performance (task/flow - performance dichotomy)
- Actional phase motivation (process-oriented model)

Since this item describes the success of the action, the aspects from achievement, or performance, is the appropriate category for this item. Regarding task motivation, the success can lead to a pleasant experience for the learner. Furthermore, IM knowledge is the motivational improvement that arises from knowledge construction through investigation of L2 in the setting. In this sense, this item implies students' grammar knowledge, or communication skills construction through CALL; therefore, it is regarded as IM knowledge. From the process-oriented model, this item implies learning process, rather than evaluation process, so this fits in the actional phase.

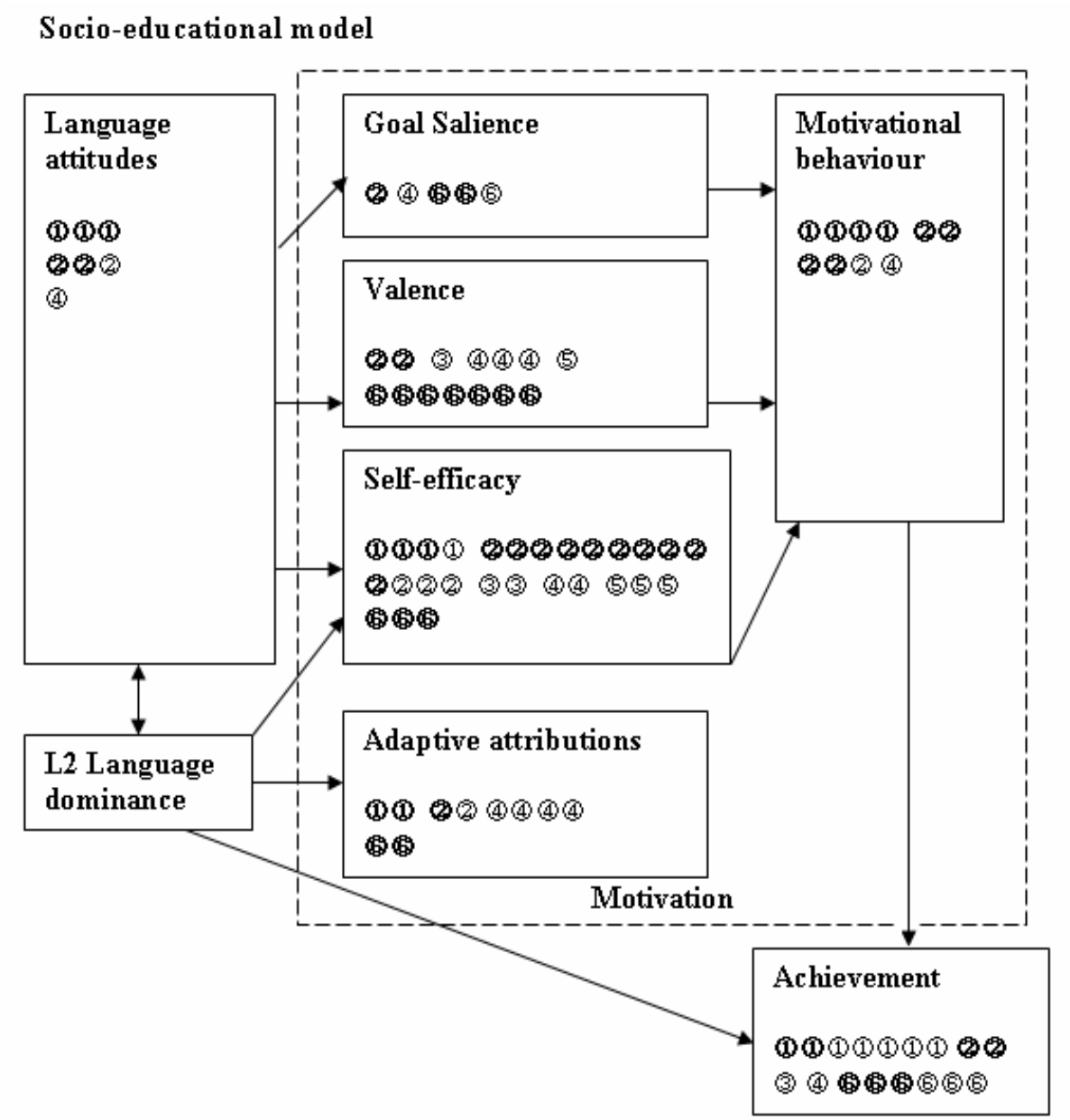
From another viewpoint or interpretation of this item, it might be categorized as yet another aspect instead of the aspect shown by this study. For instance, "Students monitor use of grammar to express themselves" can be regarded as IM achievement instead of IM knowledge, since students can sense their achievements in terms of grammar use in

communication. However, as previously discussed, this study takes the most related aspect based on description, so this item is regarded as IM knowledge because this item describes knowledge constructed process in a main aspect and this may be the strongest property that the item exhibits. With the same procedure, all items in all studies are categorized.

Appendix D, E, F, G, H, and I illustrate the result of data application, and these results indicate that CALL systematically improves L2 motivation. Figure 3.1 shows visualization of the result based on the L2 motivational theories, and this illustrates how CALL effectively influences the different aspects of L2 motivation. For instance, the items in Warschauer's (1996) study (the study number 2) are distributed in all aspects of the socio- educational model and it indicates that the CALL in his study systematically influences the learners' motivation since it stimulates a variety of motivating factors in this model. This is not limited to Warschauer's (1996) study and the socio-educational model – all studies show a similar tendency in all the models. There may be evidence that CALL applications effectively influence L2 motivation since learners received a certain motivational influence during each process of L2 task in different forms of motivational stimulus.

3.2.4. Analysis and discussion

Following the data application, the interrelations between the models are analysed for the purpose of gaining a deeper understanding of L2 motivation. First, the macro level dynamic mechanisms are discussed in order to describe the framework of how L2 learner's motivation transfers over a certain period of time. Second, the micro level of L2 motivation change is considered since it is helpful to investigate what stimuli could lead a certain kind of motivation in a single moment. Finally, the two are correlated to decipher what stimuli should be received by the students to improve motivation for long term study.



Self Determination theory

IM knowledge	①① ②②②②②②② ③③ ④④ ⑥⑥⑥⑥⑥⑥⑥⑥⑥⑥
IM accomplishment	①①①①① ②② ③ ④ ⑥⑥⑥⑥⑥
IM stimulation	①①①①①①①①①①① ②②②②②②②②②② ③ ④④④④④④④④ ⑤⑤⑤⑤ ⑥
External regulation	②②②②②②② ④
Introjected regulation	①①① ⑥⑥
Identified regulation	② ④④ ⑥⑥

Figure 3.1. Distributions of the factors in each motivational theory (the number indicates the study number – 1: Beauvois's study, 2: Warschauer's study, 3: García & Arias's study, 4: Appel & Gilabert's study, 5: Jarrell & Freiermuth's study, 6: Chang's study – and the bold indicates a strong factor in each study)

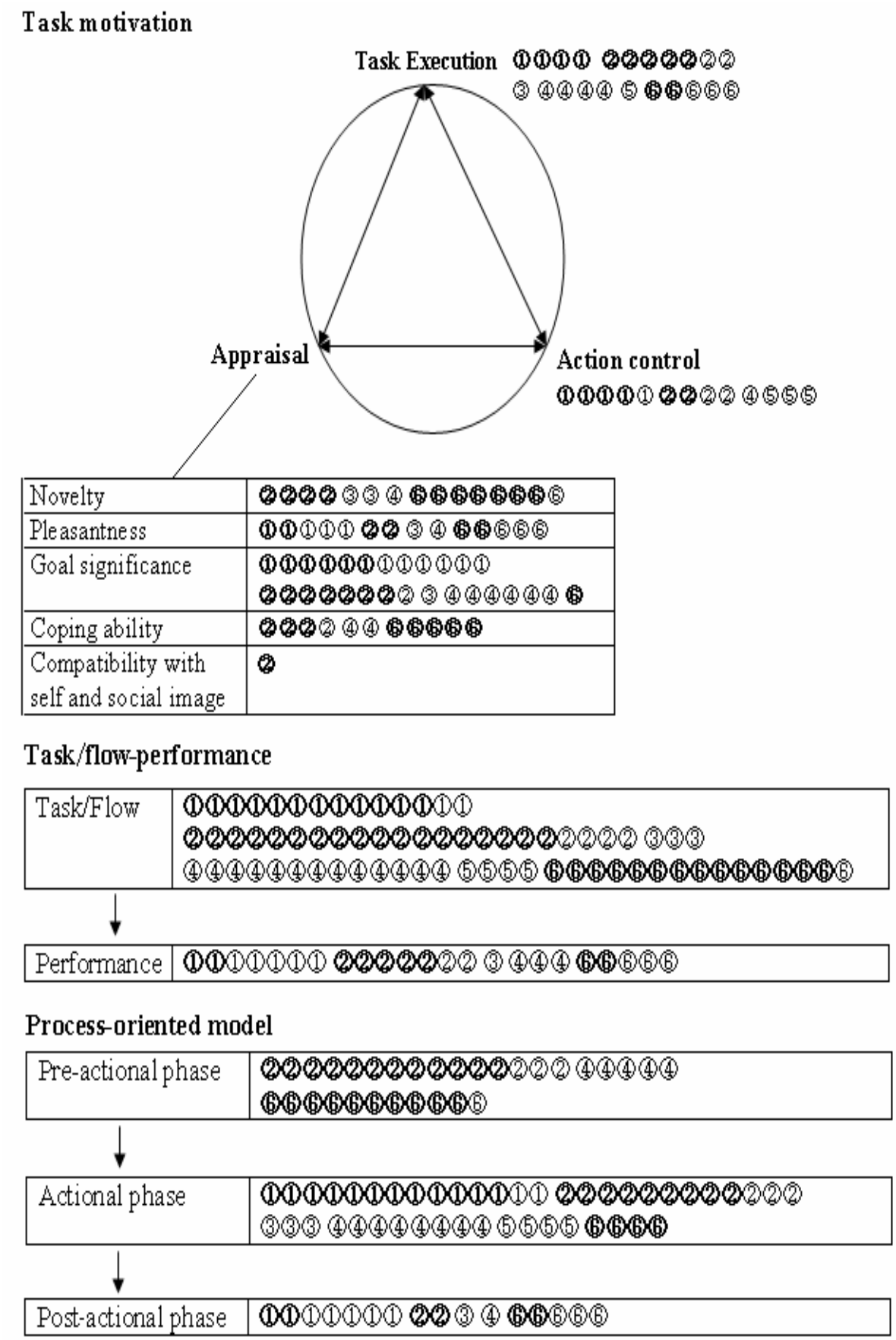


Figure 3.1. (Continued)

3.2.4.1. The macro dynamic mechanisms of L2 motivation

In this study, there are three models used to frame macro level movement of L2 motivation: the socio-educational model, task/flow - performance dynamics, and the process-oriented model. To consider interrelations among each model, this study considers the following conditions for further analysis.

1. The process oriented model is the most fundamental framework of L2 motivation.

Dörnyei and Ottó's (1998) process-oriented model clearly sets the chronological separation in a single process of L2 learning motivation. Even if Dörnyei (2003) pointed out the theoretical weakness of this model, stating that the process oriented model does not have a clear distinction as to what a single process is (e.g. a single process can be said to be one learning activity, or from the start to the completion of a single semester), the framework is useful to discuss the systematic motivational movement in L2 learning, since the weakness of the model mentioned by Dörnyei also can be regarded as the flexibility of the model – observers can set a period of time in a L2 learning process as a single process based on their needs and focus of L2 learning. Therefore, this model can be the base model to describe L2 motivation, so this study considered the process-oriented model as a superordinate category of the other motivational frameworks.

2. The elements of the socio-educational model are subordinate to aspects of the process-model.

As mentioned in the first condition, even if both the socio-educational model and the process-model describe macro level of L2 motivation, the process model is more fundamental. Therefore, it is reasonable to assume that each aspect in the socio-educational model may be regarded as a subordinate part of the process model.

3. Task/flow - performance dynamics is complementary to each model.

The Task/flow - performance dynamics model expresses continuous cycle of L2 learning: flow from appropriate choice of tasks based on a learner' skills leads to improved performance, and the improved skills can work further flow. In this function, it is useful to regard task/flow - performance as a complement of each model, not as an independent model predicting L2 motivation on its own.

Based on these conditions, the following discussion is advanced to discuss the motivational change based on each paradigm of the process model (Appendix J and K is a visualization of the interrelations of these three models, and figure 3.2. briefly shows the interrelations).

Pre-actional phase

The Pre-actional phase is the time when the sequential motivational formation of *goal setting*, *intention formation*, and *initiation of action* takes place (Dörnyei & Ottó's, 1998). In this phase, the strong factors are the three components in the socio-educational model that influence motivational improvement in this paradigm – goal salience, valence, and self-efficacy. Goal salience is directly connected to goal setting; therefore, it is natural that goal salience is a motivating aspect in the pre-actional phase. Valence is the perception of the value of learning L2 and dedication to the task (Tremblay & Gardner, 1995), so this is suitable to motivational movement through the pre-actional phase. For the initiation of the action, the assumption of success is a key feature: people will make an attempt if the task seems achievable. Hence, self-efficacy is the key to motivate students' intention to learn. For a similar reason, self-efficacy also helps intention formation because intention can be reinforced when learners have a high prospect of achievement.

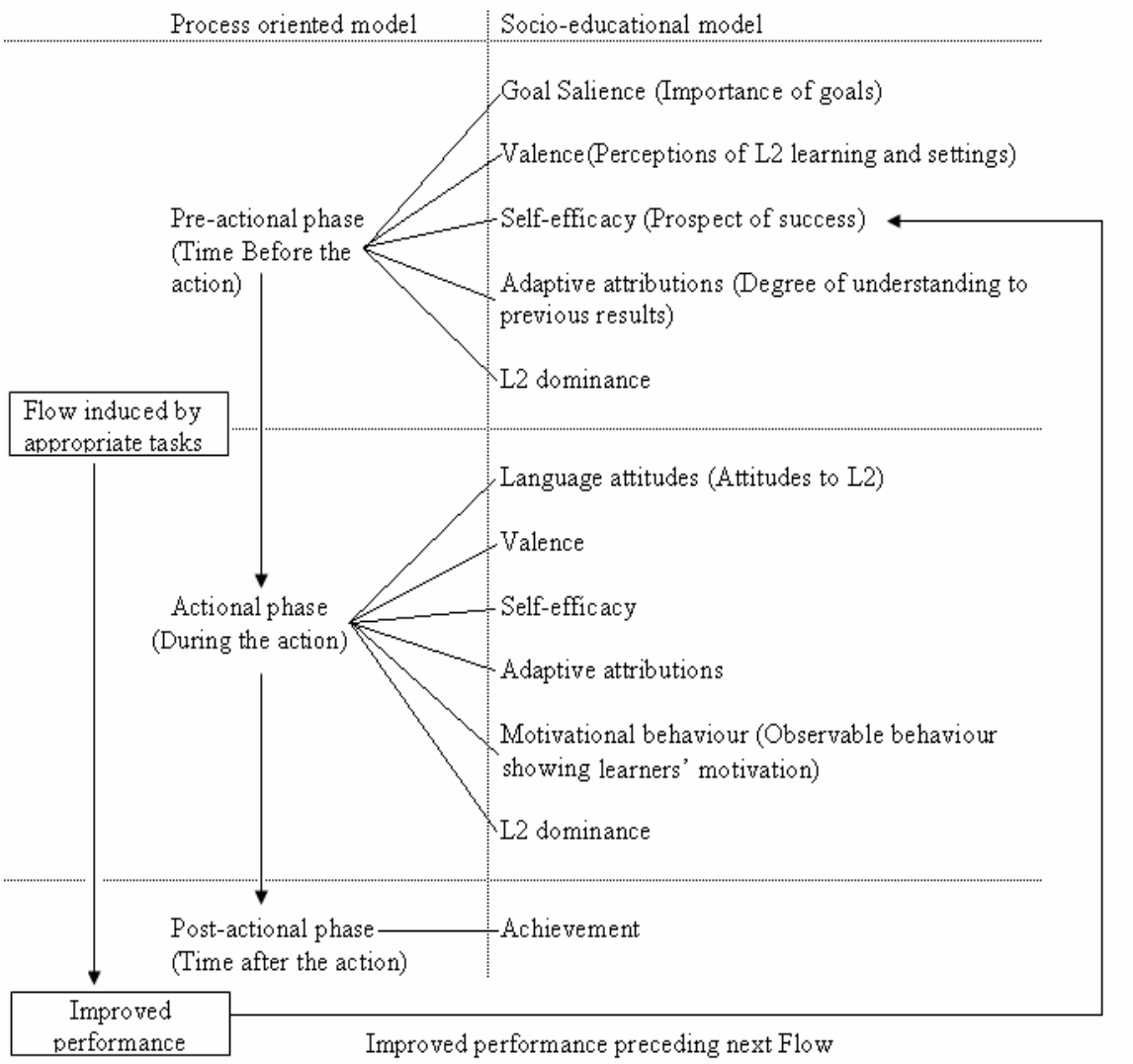


Figure 3.2. Interrelations between the socio-educational model, flow theory, and the process oriented model

In addition to these three aspects, the supportive factors recommend that adaptive attributions may also influence pre-actional motivating. Adaptive attributions are the learners' perception of the outcomes if they come from logical reasons based on skills and content; in addition, adaptive attributions are the basis of self-efficacy (Tremblay & Gardner, 1995). Therefore, the influence of adaptive attributions can also be integrated as a motivating aspect in the pre-actional phase that helps to construct intention as well as initiate the action.

From the viewpoint of the flow theory (Egbert, 2003), even in the pre-actional phase, some

factors can be regarded as performance properties. This can be interpreted that improved performance may be a motivating factor in further action, or that previous success is an indicator of the success of this action or task. Therefore, the data indicate the relation between performance and self-efficacy, and the appearance of performance aspect in the pre-actional phase is reasonable and rational.

Actional phase

There are mainly four aspects in the socio-educational model that influence motivational transfer for the actional phase – language attitudes, self-efficacy, adaptive attributions, and motivational behaviour. Firstly, the attitudes for language, such as attitude towards L2 speakers or integrative orientation, can directly reflect on what learners do. Originally, language attitudes are pre-motivation factors that influence motivating factors (i.e. goal salience, valence, and self-efficacy) (Tremblay & Gardner, 1995), so language attitudes are therefore regarded as being outside of motivational transfer. However there are several factors that have stronger disposition to language attitudes than the other components. Whereas one possible solution is to re-interpret each factor to fit into factors in the motivation framework of the original model, this study interprets this result that goal salience, valence, self-efficacy, and entailed motivational behaviour are changeable variables through action. This means these aspects have been influenced by language attitudes in many ways even in the actional phase. During the dynamic mechanisms of motivational movement, it is useful to consider it as an influential aspect that affects different types of motivating factors. Therefore, this study keeps language attitudes as a component of actional phase motivation.

Self-efficacy and adaptive attributions are also key motivating factors in this phase, since in the action phase, learners continuously evaluate their possibility of success, based on adaptive

attributions, which influences the extent of self-efficacy. Motivational behaviour is observable (Tremblay & Gardner, 1995) and it is natural that this aspect is included in the actional phase, when actual action has happened. Regarding task/flow - performance dynamics, only the task/flow aspect is apparent, since the actional phase is a task-taking process.

In addition to these aspects, valence is apparent, especially in possible factors (see Appendix K). This could indicate that valence, or in other words, the learners' perception of L2 learning in terms of value of learning activity and advancement (Tremblay & Gardner, 1995), affects motivation in the actional phase because the perception relates to what and how to behave towards L2. However, even in the same learning context, the learners' motivation generally varies: some have high motivation while others have low. This means, how a learner perceives values in L2 learning task and its advancement is relatively uninfluential compared to attitudes towards L2 language, positive prospect of L2 success, and attribution of previous or temporal outcomes. From this assumption, valence is treated as an important, but less influential motivating aspect in the actional phase.

Post-actional phase

The element of achievement in the socio-educational model is simply related to motivational movement in the post actional phase. In the task/flow - performance dichotomy, it is enough to simply focus on performance in this phase. The post actional phase is when a learner evaluates his or her outcome, so even if the interrelationship in this phase is much simpler than in other phases, this interrelation between the three models is reasonable (all of the factors supports this interrelation).

Other possible aspects to motivational transfer

One aspect that was not apparent in the data, but seemingly influential, is L2 dominance. In the socio-educational model, L2 dominance influences self-efficacy and adaptive attributions (Tremblay & Gardner, 1995), and this can be regarded a motivating aspect in the pre-actional phase. Moreover, the original model indicates that L2 language dominance is directly related to achievement (Tremblay & Gardner, 1995), but under the process-focusing paradigms, this relation can be interpreted as that achievement comes from L2 use under the L2 dominance in the actional phase. The post-actional phase is the evaluation process of the action (Dörnyei & Ottó's, 1998), and the evaluation of L2 dominance as a successor is indication of self-efficacy. If learners have adequate opportunities for L2 use, their L2 learning will succeed, so adaptive attributions are improved in the actional phase. In other words, an environment filled with L2 will lead to success. Further, L2 language dominance can be regarded as aspects that influence the pre-actional phase and the actional phase that reinforce self-efficacy and adaptive attributions.

3.3.4.2. The micro functions of L2 motivation movement

This section discusses the interrelations between motivational categories of self-determination theory and task motivation including five appraisals. Between the two motivational categories, task motivation has more micro mechanisms, as this concept integrates neurobiological brain functions, which happen in a single moment. Even if self-determination theory introduces categorization of L2 motivation on a micro level, self-determination is the result of neurobiological mechanisms in a certain period of time. In other words, the certain continuum of neurobiological function leads to self-determination. Due to this reason, this section advances further discussions as to how each aspects of self-determination theory is influenced by neurobiological functions (Appendix L and M

demonstrate it, as well as figure 3.3. briefly visualized this demonstration).

IM knowledge

IM knowledge is the self-determining motivational factor which is improved when a learner encounters new knowledge or findings (Noels *et al*, 2003), and novelty has the strongest relation to this. It is reasonable that the stimulus the brain appraises from newness of information constructs the motivation relating knowledge, investigation and accumulation.

Self-determination theory	Task motivation (including five appraisals)
[Intrinsic motivation] IM knowledge (Motivation for knowledge construction)	Novelty (Newness of information) Pleasantness (Attractiveness) Goal significance (Evaluation whether task is worthwhile) Coping ability (Assumption whether or not effective response is possible)
IM accomplishment (Motivation entailing success)	Pleasantness Task execution (Evaluation of smoothness of the task)
IM stimulation (Motivation from the property of task)	Pleasantness Coping ability Compatibility with self and social image (Perception for stimuli based on self image/ concept and social norms) Task execution Action control (Internal mechanism increasing motivation)
[Extrinsic motivation] External regulation (Motivation from external sources)	Coping ability Task execution Action control
Introjected regulation (Motivation influence by external pressures)	Coping ability Task execution
Identified regulaiton (Motivation from external valuable reasons)	Goal significance Coping ability Action control

Figure 3.3. Interrelations between self-determination theory and task motivation

The other stimuli that influence IM knowledge are pleasantness, goal salience, and coping ability. The interrelation between IM knowledge and pleasantness can be explained that the successful knowledge construction is a pleasant experience for the learner. A goal, which determines what learners learn and how they do it, is influenced by the perception of the possibility of success. In other words, knowledge construction needs the learners' positive conception of a goal (goal significance) and action initiating their prospect of success (coping ability). Therefore, goal significance and coping ability are influential stimuli to IM knowledge.

IM accomplishment

IM accomplishment interrelates pleasantness and task execution. Accomplishment, the success of learning or performing a task, is naturally pleasant for a learner, and this successful outcome comes from effective task execution through the learning process.

IM stimulation

IM stimulation is a motivating factor when learners are interested in the property of the task (Noels *et al*, 2003). There are five possible neurobiological stimuli affecting it: pleasantness, coping ability, compatibility of self and society, action control, and task execution. From the definition of IM stimulation, pleasantness is one of main stimulus affecting IM stimulation as learners' interest improves when they feel performing a task is enjoyable. When learners feel they can conduct the task effectively, their motivation to do so will increase; thus coping ability is one source of IM stimulation. Learners evaluate the property of the task based on their understanding of the content of the task and possible outcomes, with their ideal self image and social norms reflected in this evaluation process. Therefore, compatibility of self and society is a functional stimulus to IM stimulation.

Action control is the internal mechanism that leads to further action (Dörnyei, 2003). Based on this function, action control activates interest in the task. Moreover, smooth task execution will facilitate a positive image of the task. This can be the explanation of the interrelation between task execution and IM stimulation. Finally, even though the number of factors which supports the stimuli varies, the significance of each stimulus is not overly different due to the function in each of the stimuli.

External regulation

External regulation depends on the benefits or costs of the task (Noels *et al*, 2003). Among the motivating stimuli from the task motivation, task execution is the main stimulus working to external regulation. Task is the process that leads to benefits (e.g. academic rewards, career improvement) from some costs (e.g. time, money (learning resources)), so the task is executed based on the predicted benefits and costs strongly affect external regulation.

Other than task execution, coping ability and action control are suggested as influential stimuli by the possible factors. Coping ability is the motivational factor by calculating the success (Schumann, 2001a), and action control is internal improvement of motivation to further action (Dörnyei, 2003). These stimuli are more focused on benefit from the task. The reason for this is that coping ability emphasises the possibility of achieving the goal (benefit), and action control can happen more readily when learners feel a positive prospect towards the outcomes (benefit).

Introjected regulation

Introjected regulation is external pressure that induces learners to further their studies (Noels *et al*, 2003). As the influential stimuli, coping ability and task execution can be the stimuli

having function to introjected regulation. A possible interpretation of these phenomena is that even if students are exposed to external pressure, they still evaluate how to manage it based on their ability. Furthermore, although the types of sources between external regulation and introjected regulation are different, the motivational function could be the same – the analysis of the task being based on required resources and possible outcomes with the prospect of how achievable the goal is. Learners try to be released from the pressure (benefit) through their efforts (cost). Therefore, these two can be regarded as affecting stimuli to introjected regulation.

Identified regulation

Identified regulation is also an external motivating factor, but not the same as introjected regulation; learners have concepts as to why undertaking action is a worthwhile process (Noels *et al*, 2003). This indicates that goal significance is one stimulus that influences identified regulation. Valuable action-taking comes from the significant goal for the learners. Because evaluation of the possibility of achievement happens when the goal is more significant, coping ability is also an important stimulus to improve identified regulation. Another stimulus that possibly affects identified regulation is action control, which is indicated by the possible factors. When learners have worthwhile reasons to take action, they do so with the motivation internally initiated; hence, identified regulation and action control can be a rational interrelation.

Amotivation

The set items in each research project aim to measure how to improve motivation; therefore, no item suggests an amotivation effect in L2 learning using CALL. However, amotivation should be considered, and in micro level mechanisms, amotivation can be the result of

negative stimuli from unsuccessful task execution. The effects of amotivation in dynamic L2 motivation mechanisms are discussed in the next section.

Neurobiological functions to intrinsic motivation and extrinsic motivation

To consider intrinsic motivation and extrinsic motivation, the intrinsically motivated learner receives more types of stimuli. For example, pleasantness is a salient stimulus: pleasantness influences each intrinsic motivational aspect, but not extrinsic motivational aspects. It is reasonable that learners do not feel pleasantness when dominated by external motivating factors. Novelty and compatibility with self and social image are also typical stimuli working to intrinsic motivation.

3.2.4.3. The interrelation between macro dynamic mechanisms and micro motivational functions

The previous two sections explained the interrelations of each model's aspect from the macro and micro points of view. This section further discusses how micro mechanisms construct macro dynamic mechanisms of L2 motivation. Appendix N and O show the interrelations of all five theories, and through analysing these appendixes, it is clearly demonstrated that some micro mechanisms only appear in a certain period of process.

Motivational construction in the pre-actional phase

At the pre-actional phase, goal salience, valence, self-efficacy, and adaptive attributions influence L2 motivation, and each item has a relation with typical micro motivational factors.

In regards to goal salience, two micro motivational aspects are related – IM knowledge and Identified regulation. As discussed in the previous section, basically IM knowledge consists

of four stimuli (novelty, pleasantness, goal significance, and coping ability), but for this particular case, only goal significance is relevant in terms of motivating stimulus. This can be interpreted that knowledge construction as a particular goal of the L2 learning improves IM knowledge. Considering identified regulation, goal significance and action control have a role to play in this. This indicates that in the goal setting, the significance of goals and internal motivating mechanisms corporate to form motivation as an early stage of motivational construction.

Valence also has a connection to IM knowledge, but to focus on influenced stimulus, novelty is the key stimulus that affect valence. This means that as a stimulus viewpoint, the feelings or expectations of the task in this stage is based on how further action can give new information or experiences.

Self-efficacy is the combination of IM knowledge, external regulation, and identified regulation. In this initial stage of action, IM knowledge comes from stimuli of novelty and coping ability. When learners decide whether they should or should not take action, they think of how they could cooperate with new information effectively. If a positive assumption is made, they may take action. In addition, external regulation and identified regulation are also components of self-efficacy in the pre-actional phase. External regulation indicates task execution in this stage because a learner is mainly concerned about how effectively the task can proceed. Identified regulation entails coping ability since identified regulation is the reason a learner feels worthwhile enough to continue the action, and in the pre-actional phase, the possibility of achievement, coping ability, is one influencing factor.

As for adaptive attributions, this is affected by IM knowledge and identified regulations.

Furthermore, IM knowledge has a connection with novelty, and identified regulation has a relationship with coping ability. The former means learners positively evaluate the information that is possibly provided by the learning context. The latter implies learners' positive assumption of success based on their past experiences.

Not taking the information from the data, but from considering two of three extrinsic motivation aspects, introjected regulation is also a possible influential aspect in the pre-actional phase. External pressure or force can be strong enough to initiate action. For example, the class-taking or test-taking for graduation urges students to use L2. Therefore, this can be included as a pre-actional motivating factor and entailed stimulus can be coping ability or task execution based on the discussion in the previous section.

Motivational transfer in the actional phase

In the actional phase, language attitudes, valence, self-efficacy, adaptive attributions, and motivational behaviour have functions, and each aspect is systematically influencing micro components.

As for language attitudes, IM stimulation and introjected regulation are the influential sub-micro components. This interrelation shows that the attitude for property of the task or L2 learning, as well as external force, may influence attitude for L2 settings (class, speakers, cultures) in a broader sense, which further leads to more specific motivating factors such as valence (perception for L2 learning context) and self-efficacy (positive evaluation of possibility of success) because these two factors are influenced by the L2 circumstances of learners. In terms of IM stimulation as motivating factor to language attitudes, compatibility with self and social image, task execution, and action control are all possible stimuli to

improve IM stimulation. The ideal self and social norm is one basic measurement with which the learner can assess the L2 setting, and if the learner feels action-takeing in the encountered L2 setting is worthwhile, he or she will be motivated by this type of L2 setting (this type of self-determined motivation is IM stimulation). In addition, this process can promote the motivational improvement through internal mechanisms. In other words, motivation is improved by action control stimulus. As for task execution, motivation will improve when the task is smoothly conducted, so this is also a stimulus that influences IM stimulation. Regarding introjected regulation, task execution is the stimulus which affects it. Introjected regulation is basically external pressure, and learners can feel positive impressions only when they complete the task smoothly. In this case, learners can receive the appraisal stimulus, influencing motivational formation for IM stimulation, as the positive perceptions for the value of L2 task and learning.

As for valence, the related self-determined motivation is IM knowledge and IM stimulation. In this aspect, IM knowledge comes from novelty, since the properties of the task relate to the newness of provided information. IM stimulation consists of pleasantness and task execution. The matching between the property of the task and learners' positive perception induces pleasantness. Moreover, effective execution of the task also leads to it. Self-efficacy comes from IM knowledge and IM stimulation. The reason IM knowledge and novelty are interrelated in this phase is because new information affects the evaluation of the probability of success in receiving new information. IM stimulation are separated by the influence of two stimuli – task execution and action control. These two stimuli are aroused when the task is effectively advanced, which stimulate internal motivating mechanisms. Therefore, self-efficacy can be influenced by these three stimuli.

IM stimulation and introjected regulation affect adaptive attributions. IM stimulation is further divided into task execution and action control as influential stimuli. Adaptive attributions are how certain the learner succeeds or fails tasks, so how the task is executed and entailed internal motivational change is a possible sub-category of IM stimulation under adaptive attributions. Introjected regulation in this aspect means the external environmental power that affects the success or failure of L2 task or learning, and if the learner knows what happened and how to treat it, and have prospect to handle it (coping ability), he or she will maintain or improve motivation.

When a certain motivational behaviour becomes apparent, learners may have IM stimulation, as a self-determined motivation, instead of the extrinsic type of motivation. When learners are internally motivated, they tend to show observable motivational behaviour. The basic stimulus to this aspect is pleasantness. This can be interpreted that when learners feel that an L2 task or learning in general is enjoyable, it will be manifested in their behaviour.

Motivational transfer in the post-actional phase

The post-actional phase is the evaluation stage of a process, and if the goal is achieved, IM knowledge and IM achievement will be developed in the learner. IM knowledge in this phase is different from the other two phases: the emphasis is successful knowledge construction and a learner can feel pleasant about it. IM achievement is the combination of stimuli – pleasantness and task execution. Successful task engagement arouses enjoyment for the learner. However, sometimes learners may experience failure. If learners cannot find any connection between the process and the result, they will become amotivated, and this can negatively affect their willingness to take further action.

Summary

This section has discussed the function of the micro mechanisms in the macro L2 motivation transfer, and the systematic function has been revealed through analysing each process in L2 motivational construction. Figure 3.4 visualizes these systematic interrelations between the theories and their aspects.

3.2.4.4. The causal factors of each stimulus and motivational aspect

The discussion in the last three sections demonstrates what kind of stimuli or self-determined motivation should be provided so as to improve L2 motivation in each paradigm in an action process. This section further considers what kind of concrete factors can improve motivation. Regarding these factors, they are set as two levels of significance based on the validity of the original data, but this section does not emphasize the significance, rather it treats all factors as one motivating factor since all factors can improve motivation to a certain extent in certain L2 settings. The display of these factors helps in considering the content and specifications of appropriate CALL applications.

Influential factors for pre-actional motivational improvement

In the pre-actional phase, the first motivational construct that affects this phase is goal setting and, to improve this, stimulating IM knowledge and identified regulation are recommended. As regards stimulating (based on stimulating goal significance appraisal), items #6-5 and #6-6 in the Appendices, in particular, Appendix N and O (the first number indicates whose study it is (1: Beauvois's study, 2: Warschauer's study, 3: García & Arias's study, 4: Appel & Gilabert's study, 5: Jerrel & Freiermuth's study, 6: Chang's study) and the second number indicates which item is in each study; that is, #6-5 indicates the item 5 in Chang's study), can provide a concrete set of criteria. These two items indicate that the importance of learning

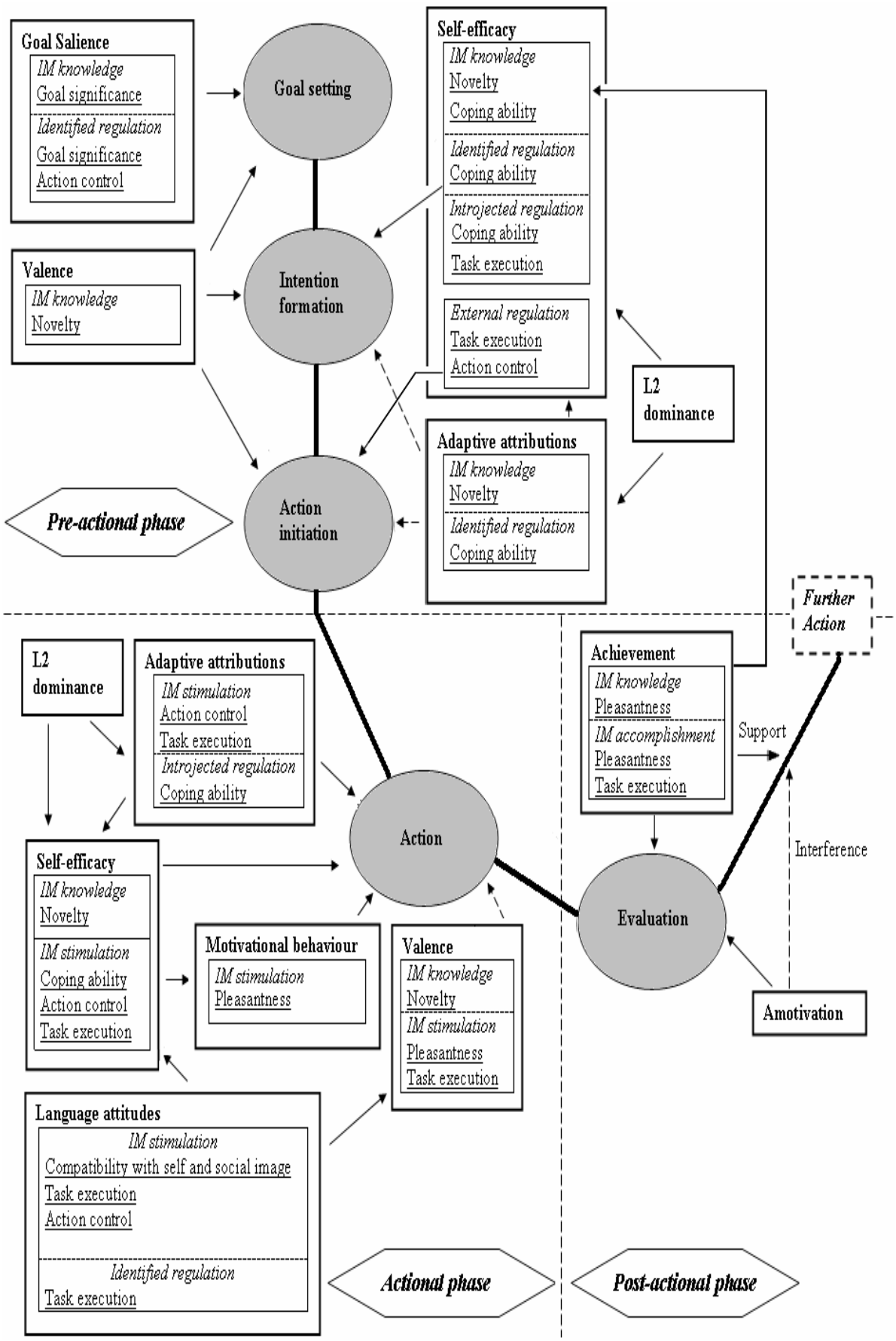


Figure 3.4. CALL motivational transfer model

and understanding about the subject matter and its material may affect IM knowledge. Identified regulation can be activated by instrumental motivation (#2-23) and a large degree of decision making (#4-5). The item #2-23 can be interpreted as instrumental motivation since increased career prospects is the purpose of L2 learning. How much the learners decide what they will do and want to achieve is related to internal motivational improvement (action control) because decision-making is related to the degree of learner autonomy in context.

Self-efficacy affects intention formation and initiation of action. According to Dörnyei and Ottó (1998), intention formation is internal conditioning for the taking of action, whereas initiation needs to fulfil external conditions which are sufficient enough to start L2 use. From this viewpoint, intention formation can be supported by the following factors shown in Appendixes: skill improvement through computer medium environment (from #2-11, #2-12, #2-15 and #2-17), increasing opportunities of authentic L2 use (from #2-15, #2-18, #2-27), and information usage in other works (#4-11), which can influence IM knowledge from novelty and coping ability appraisals based on the property of each item. These expectations can create the intention to study L2 using CALL.

Number2-1, #2-2, #2-5, #2-8, #2-20, #2-24, and #2-26 also indicates performance improvement through CALL, but these items show how physically important computers are in learners' works, so these may be regarded as action-initiating factors that CALL can provide for the learners (or ought to be provided to induce learners to begin study). These items basically represent the factors that come from action control, since this initiation is also the result of internal motivational construction. However, #2-5 can be categorized as task execution since the item talks about the (possible) the smooth advancement of task, and #2-26 can affect coping ability because of the mentioning of effective cooperation with task

through computer. Identified regulation, with coping ability stimulus, is the positive assumption of taking action based on the amount of effort and appropriateness of learning procedures (from #6-11, #6-12). This assumption (coping ability) is also the factor that occurred in motivation formation. Other than these factors, #4-10 is overall a description of the computer mediated environment that stimulates motivation as well as task initiation.

Adaptive attributions may also affect intention formation and action initiating. The data shows knowledge of topic (#4-8) as well as learners' trait abilities (e.g. experience, mutuality, from #4-7) that influence motivational construct. For these two items, there may be factors to stimulate intention formation since there are internal conditions leading to success (therefore, these items interrelate with coping ability). As for initiation of action, there are no data that supports this, but the given context can be a factor since adaptive attributions evaluate why there is success or failure based on the set environment.

Valence may be affected through the pre-actional phase, and possible factors are preference for the course based on the expectations of learning (from #6-1, #6-2, #6-4, #6-8, #6-9, and #6-10), integrative motivation (#2-14) and instrumental motivation (#6-7). The types of motivating factors can vary, but these entail novelty appraisal because the core motivating factor is newness of information.

Actional phase motivating factors

There are five aspects of the socio-educational model that influence the motivational construction in the actional phase – language attitudes, valence, self-efficacy, adaptive attributions, and motivational behaviour. One component of language attitude is IM stimulation, and this is lead by the stimuli of compatibility with self and social image, task

execution, and action control. The factor complying with the first stimulus is the feeling of being a part of the community (#2-13), the factor complying with the next is cooperative or collaborative learning settings (#2-10, #4-13), and the factor complying with the last is the power to overcome isolation (#2-25). The detail functions are different, but basically peer-learning environment increase motivation. In addition to IM stimulation, introjected regulation is the other component of language attitude. In an L2 compulsory (or dominant) and/or L1 prohibited (or non dominant) setting (only the learners feel this) are the factors (from #1-19, #1-20, and #1-21). This setting affects task execution and if learners deal with the situation effectively, their motivation may be improved.

Valence, IM knowledge and IM stimulation are influential on self-determined motivation. Regarding IM knowledge, the increased availability of cultural information (#3-2) is only one factor. The other factor is coverage of content in the given learning setting (#6-3). These two factors are stimuli acting as novelty appraisal because they indicate the possible information received from the context. Regarding IM stimulation, authenticity of task and communication (#1-17, #4-3), particularly with a native speaker (#4-14), can arouse a positive attitude towards learning, as well as an interest in the topic (#4-1), especially if it is intellectually challenging (#4-9). These task property factors improve learners' motivation through stimulating IM stimulation. In addition, if the environment has supportive conditions to use L2 (#5-1), learners may handle tasks that use L2 better, and improve IM stimulation as well as valence. One more factor is challenge with computer use (#2-22), which influences the motivation since computers can assist and thus improve L2 learning and tasks (even if only in the learner's own perception).

IM stimulation is effective for self-efficacy. One effective stimulus is action control, provided

by two different factors: ease of task in the computer mediated environment (#1-9, #1-13, #5-2, #5-4, as well as #1-18 since this can be a result of less anxiety, ease of task difficulty), and constructing self-study style (#1-14). In addition, task execution stimuli from learners' easy practice environment (#3-3) followed by increased control (#2-21 and #5-3) are possible factors of enhancing motivation. These factors also lead to positive assumption of achievement (#6-15) through effective learning with CALL. Other than IM stimulation, IM knowledge also improves self-efficacy by providing an easy referencing system to fundamental information to comprehend the content (#3-1).

As for adaptive attributions, IM stimulation and introjected regulation influence proper evaluation of task advancement (i.e. continuous temporal outcomes in a process). Empowerment towards tasks by the computer (from #1-11 and #2-29) leads to action control stimulus as this improves learner autonomy in learning and decreases inner helplessness which is aroused when encountering an uncontrollable environment. In addition to empowerment, proper learning settings – such as enough task-taking time under proper restrictions – are important factors to make decisions appropriately, as well as to execute tasks effectively (from#1-10, #4-2, #4-6). This also decreases frustration, even using computers (#2-28), and further arouses stimulus of task execution to an extent. In the case of adaptive attributions in the actional phase, introjected regulation is that insufficient effort and hard work would lead to unsuccessful results (#6-13, #6-14), so to avoid unsuccessful consequences, learners should try to study more under the pressure. This means learners' coping ability works to arouse the prospect of success as a form of information of non-successful procedures that should not be advanced.

Motivational behaviour is an element that is affected by IM stimulation. In these aspects, IM

stimulation just interrelates pleasantness appraisal, and more concretely, enjoyment of communication through the computer (from #1-7, #2-6, #2-7, #2-9), enjoyment of studying with the computer (from #1-4, #2-3, #2-19), and enjoyment of computer mediated learning contexts (#1-12, #1-15). Moreover, the degree of pleasantness from these factors can be measured against how much learners engage in tasks (#4-4).

Positive factors in the post actional phase

In the post motivational phase, there are three types of motivating factors. The first one is the success of information construction and use of L2 (#1-1) or learning partners (#1-16). Number 1-1 only mentioned grammar, but all other L2 skills may be effective equally, as with any skill, success leads to positive impression. There are IM knowledge aspects affected by novelty appraisal. Like the other factors, achievement itself, in particular by increased output and resulted outcome, is a pleasant experience for the learners (from #1-2, #1-3, #1-5, #1-6, #1-8, #2-4, #2-16, #3-4 and #4-12). In addition, a worthwhile outcome through the task taking is the other type of achievement coming from smooth task execution (from #6-16, #6-17, #6-18, #6-19, and #6-20).

Other possible factors outside the data

The data show concrete factors that enable learners to improve motivation effectively and, to describe the motivating function more precisely, this section will further analyse the previous CALL studies that show the method to create CALL effective in improving learners' motivation.

From outside the data, there are mainly two factors that should be discussed to consider motivational transfer through CALL. The first factor is, as shown previously, the requirement

of L2 study from outside. For example, if a learner takes an English course to fulfil a graduation requirement, this can work as a motivating factor. These external demands will be strong L2 learning initiators for the learners. Furthermore, to assess the motivational improvement thorough CALL, several general criteria for effective CALL production should be considered. There are mainly three major categories: specification, user-friendliness, and content. This section explains why these factors are important based on literature, and how to integrate them into motivational improvement.

A specification is the information about a system given to the user. These are the external prerequisites a user needs to consider before using or purchasing a certain system (Scholfield, n.d.). Therefore, the user's understanding of 'specification' is directly connected to the successful implementation of CALL (Bradin, 1999), and this also strongly influences motivation thorough CALL. There are two main specifications. The first one is aimed at the target user, including the target learner, target level, target skills, target language, the goal of the system, activities style, to name key areas (Healey & Johnson, 1997; Knowles, 1992). As needs differ between users (Healey & Johnson, 1997), knowing the target users of CALL is important. This mainly influences self-efficacy in intention formation process in the pre-actional phase, since this strongly influences whether the CALL program is suitable for a particular learner, which is a premise of success through using CALL.

The second main specification is the platform required when installing the CALL system. This includes the required operating system and its version, hard disk space, drives, and ancillary equipment. Moreover, the networking requirement is also important as it may interfere with the system adopted (Healey & Johnson, 1997; Bradin, 1999). Platform specification is an essential criterion because even if a system itself is great, the system might

become useless if the available equipment does not satisfy the requirements of the system (Bradin, 1999). This can affect initiation of a task in the pre-actional phase because to use CALL, these required conditions should be provided. In other words, learners will study with a certain CALL program if they meet the platform requirements, or they will lose motivation if the CALL program they try to use cannot run on their particular platforms.

The second aspect is user-friendliness, which is how easy manipulation of the system is, and this affects the control of CALL and learning with it. According to Murray and Barnes (1998), initial impression strongly affects the user's evaluation. In addition, the authors point out that, generally, the users gained negative impressions when using the system for a long time. For these reasons, the system should be created in order to provide a positive initial impression for the users, and user friendliness is a key factor to achieve it since Sprenger (n.d.) mentioned that systems that are not user-friendly seldom attract learners. Therefore, increasing user-friendliness, in other words, ease of use of a system is an important factor to keep the user's positive attitude and motivation. More practically, ease of installation is the first criteria and the first step in the use of a system, so the system must have clear, coherent instructions for installation, without special pre-requisite skills and knowledge (Sprenger, n.d.). Installation must be successful for starting action; this is a fundamental factor in initiating action.

The next point is how easy it is for the user to learn the sequence of processes in the software. Knowles (1992) suggested instruction must be complete and effective to learn easily. It is also important that if the system is difficult to use, adequate training should be provided (Sprenger, n.d.). Effective instruction of use is important not only at the initial stage, but also throughout the entire course of use. (Knowles, 1992; Scholfield, n.d.). Knowles (1992)

discussed the issue of` safety, because a user can be easily discouraged if the system is unreliable. In addition, Knowles (1992) also talked about preparing comprehensive internal or external support to help learners maintain their study without interference. These factors should be considered to improve the actional phase motivation, stimulating action control or self-efficacy.

The content of CALL involves how it affects the learners' acquisition of the target language, so that it fulfils the educational requirement. The accuracy and authenticity of content are the fundamental aspects of an educational system (Bradin, 1992; Knowles, 1992). Ethics is also considered carefully (Knowles, 1992), especially when monitoring content that may include cultural stereotypes (Bradin, 1999). One of the purposes of language learning is to cultivate the broader sense of acceptance of other cultures, not to promote a sense of xenophobia (Murray & Barnes, 1998). These points are directly connected with valence in the actional phase as they reflect a property of L2 learning and tasks.

In addition, there are also motivating factors that stimulate valence: the perception of the property of the tasks; effective use of colour, graphics, and sound (Garret *et al*., n.d.), appropriate use of tone (Knowles, 1992), and effective use of non-linguistic cues for supporting the learner's study (Scholfield, n.d.). To maintain a learner’s motivation in the actional phase, it is important that content is created to foster the learner’s positive self-image and to remove anxiety about using English (Hubbard, 1987). This is a factor stimulating compatibility with self and society.

Content also relates to how a learner can maintain, increase or even decrease his or her motivation to study using the system. The essential questions are whether a system is

interesting or not (Bradin, 1999), and whether explanation is comprehensive or not (Hubbard, 1987). Bradin (1999) mentioned that content should be appropriate to the learner's level since content that is either too easy or too difficult can easily discourage the learner's motivation. This means that appropriate content and explanation will lead to effective learning advancement, so it relates directly to task execution in tasks. Moreover, it is also said that content that is too familiar or too far from a learner's background may also decrease motivation (Hubbard, 1987). Newness of information (novelty) is also important in constructing content to improve motivation.

Feedback is one of the key criteria that affect a learner's motivation, because a learner wants to know how he or she is progressing with their studies in the system (Sprenger, n.d.); in particular, a learner's motivation may be increased when the learner is aware of progress, and appropriate feedback can inform the learner of his or her progress (Murray & Barnes, 1998), because of its connection with pleasantness from achievement. The criteria shown above are essential factors in producing CALL and they are strongly related to the learners' motivation in studying through CALL.

Summary

This section explored what concrete aspects could improve learners' motivation based on the motivational improvement hypothesized by the theories. The data from classroom applications of CALL show how learners' motivation changes in L2 learning and CALL-creating-criteria suggest further technological aspects that should be considered in producing motivating CALL effectively. The combination of these factors indicates how CALL systematically improves L2 motivation and what elements should be incorporated for producing motivating CALL. At the conclusion of this process, the motivational change and

factors of CALL are visualized by figure 3.5. This figure gives an illustration of what kind of factors should be incorporated in which phase of L2 action to promote systematic improvement of L2 motivation by CALL. This model shows influential factors from macro level to micro level with concrete examples, so this model could be an indicator of what kind of element actually should be integrated in real CALL producing.

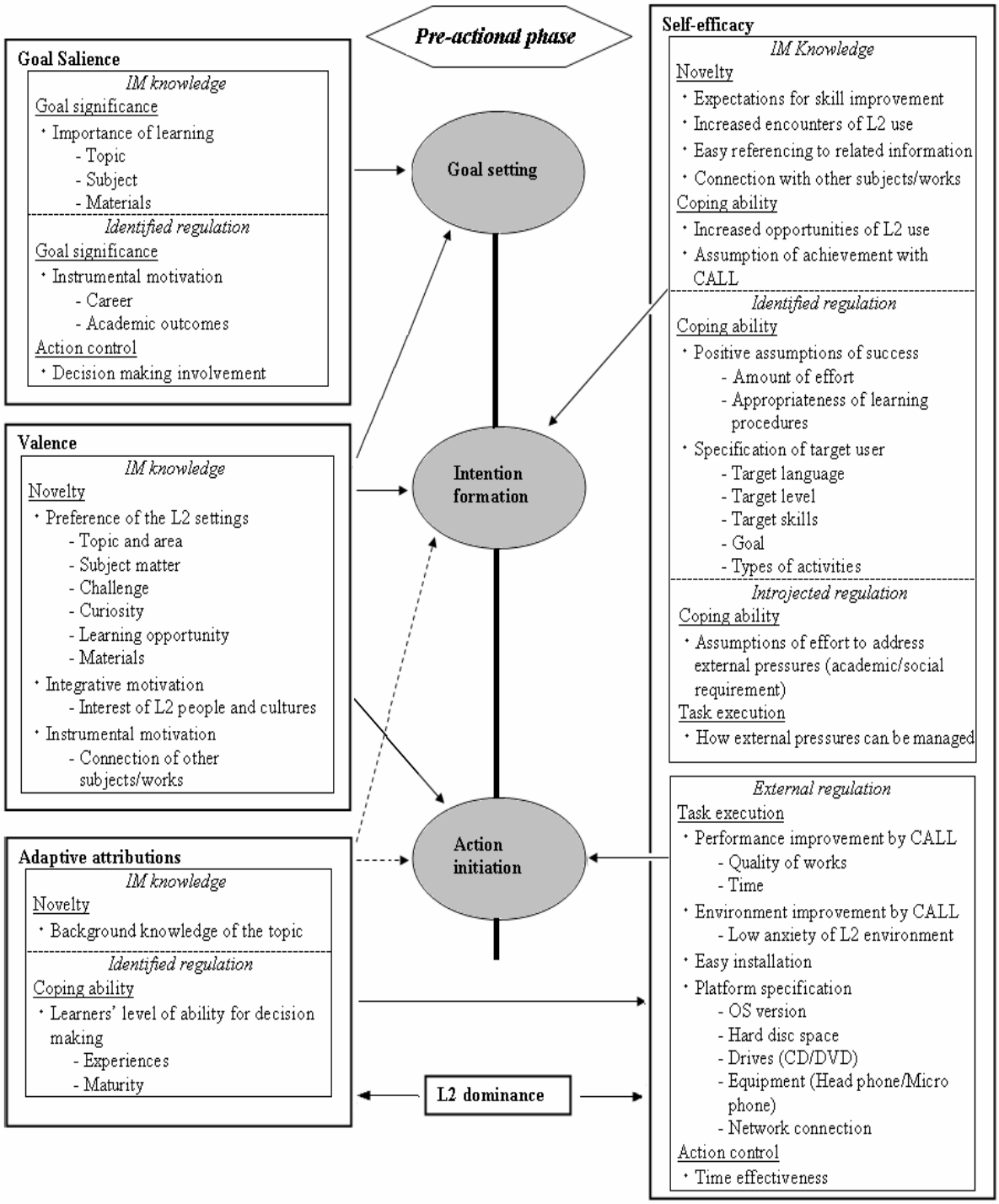


Figure 3.5. Detailed CALL motivational transfer model

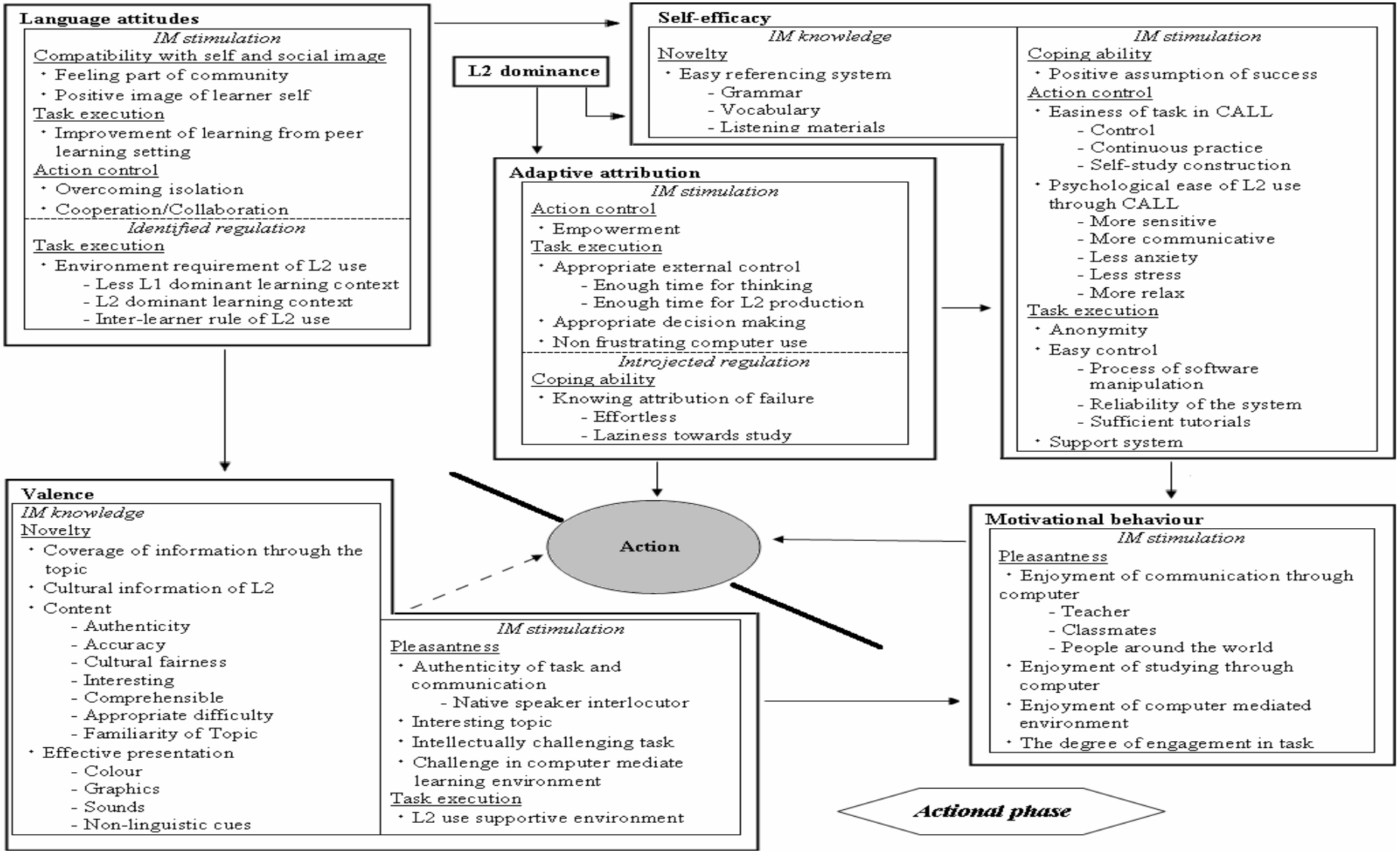


Figure 3.5. (Continued)

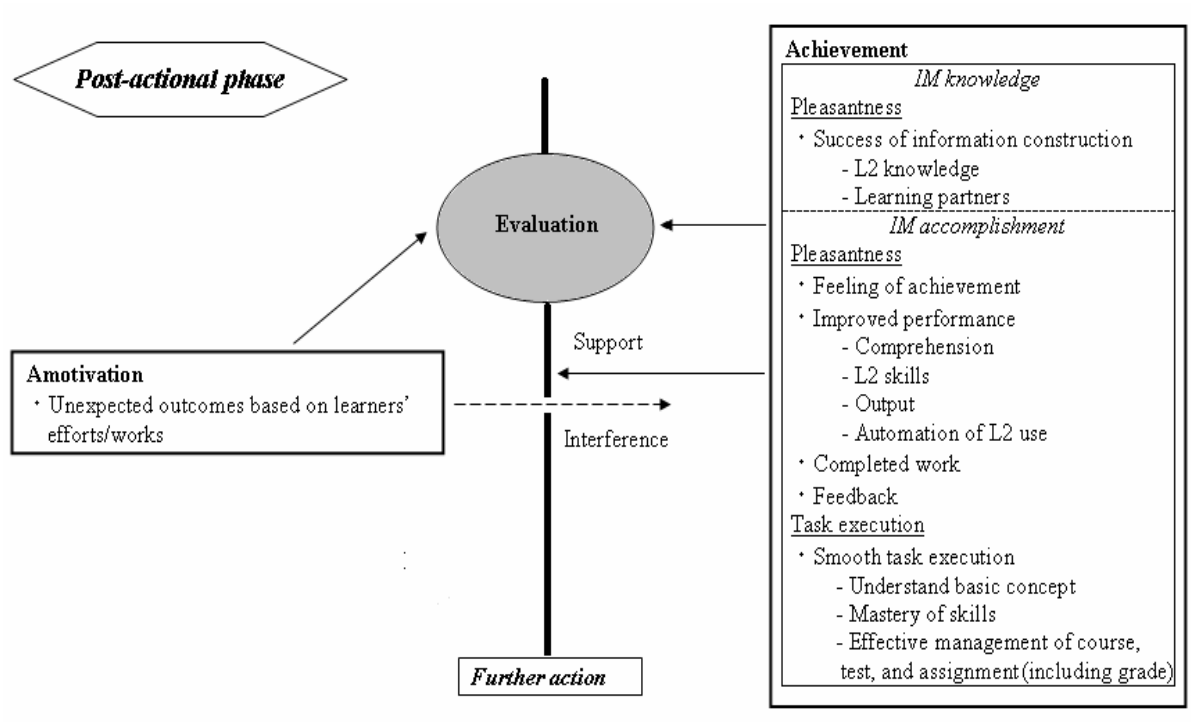


Figure 3.5. (Continued)

3.3. Classroom CALL to self-study CALL

Section 3.2 presented the model that shows in details the systematic formation of L2 motivation through CALL. This section further discusses how this model should be changed to suit to self-study CALL in order to find the answer the research question – how to improve L2 motivation with self-study CALL. Reinders and Lewis (2006) pointed out that materials for self-study should be carefully selected. In addition, regarding the suitability of materials for self-study, these materials should be different from the materials for classroom use. Therefore, it is important to know the different requirements of both types of materials. Based on this premise, the following discussion analyses the differences between CALL application in the classroom and in self-study, and, accordingly, adjust the criteria in the CALL motivation mode as suggested in the previous section.

To describe how self-study CALL motivates learners, several considerations should be reflected to apply the CALL application motivation model properly. Basically, even if

classroom setting and self-study are different, self-study learners can receive almost all of the benefits that a classroom CALL application provides. Since both settings are mediated by computers and the learners direct the computers, they can receive benefits that a computer mediated environment provides, such as learning improvement or psychological ease under CALL settings.

However, there are some differences between classroom CALL application and self-study CALL. One major consideration is the communication aspect of CALL. New communication technology, referred to as CMC, is applied to CALL, termed CMC based CALL (Levy, 2006), and such CMC based CALL, such as language learning through Multiple-use Object-Oriented domains (MOOs), provides communicative settings and learners can study language interaction, as well as collaboration with others (Kotter, 2006). However, this kind of interaction does not happen frequently; for example, learners who are in a non-network based environment or who study by stand alone types of CALL would not have the opportunity to study through interaction. Under virtual conditions, a computer 'interacts' with people, so communicative aspects could be retained in some sense, but this 'human-computer interaction' and communication amongst people is still very different; therefore, these types of aspects should not be expected through self-study CALL all of the time.

To reflect this condition, the study treats the term *self-study CALL* as a focus on non-communicative types of self-study CALL so as to consider the widest application settings, and as consideration of this particular type of self-study CALL, the aspects based on communicating with others should be discarded[6]. For example, language attitudes in the actional phase suggest cooperative learning aspects as motivating factors, but in the setting in

[6]On the other hand, interactive type of self-study CALL can include communication factors as motivating factors.

which no interaction with others is expected in their learning method, this motivational transfer would not occur. In that sense, these aspects are removed to describe self-study CALL motivational transfer.

In addition, it is not necessary for the target learners to take part in academic courses, as the motivating factors may be affected by the forceful nature of the academic setting, and are therefore not included in the self-study CALL model. To reflect on these considerations, figure 3.5 is rewritten, and as the result, figure 3.6 is described to demonstrate how self-study CALL systematically influenced learners.

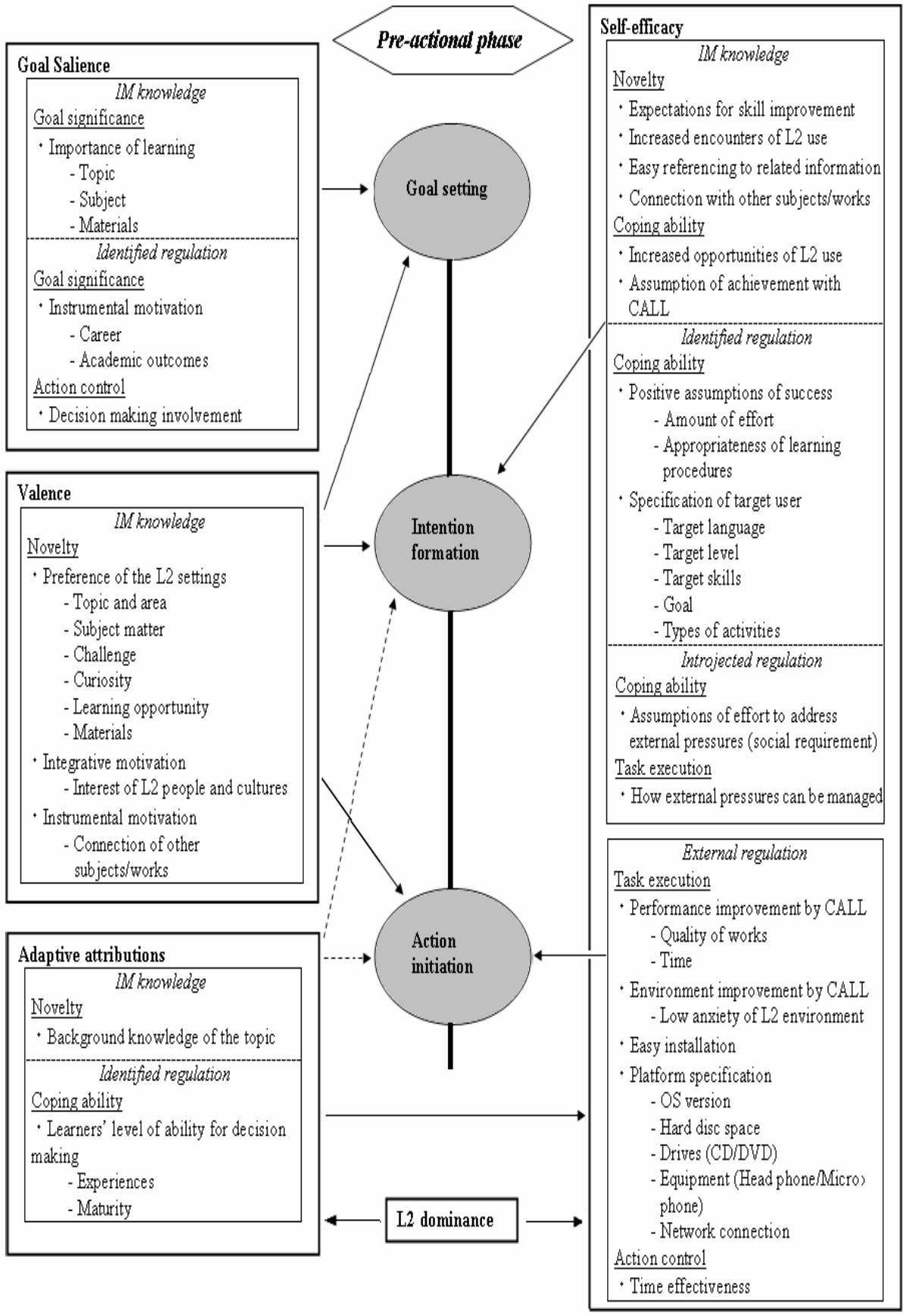


Figure 3.6. Self-study CALL motivational transfer model

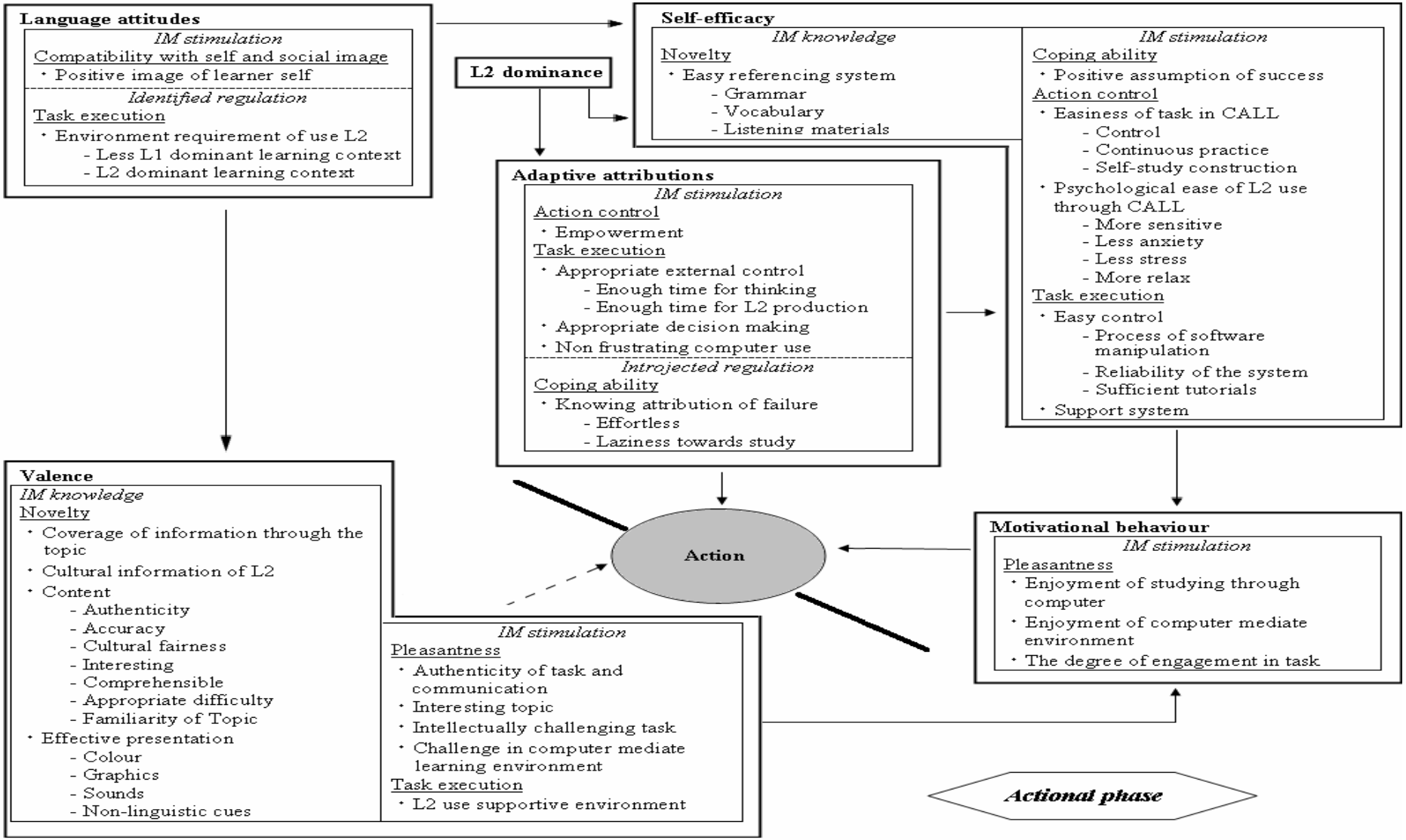


Figure 3.6. (Continued)

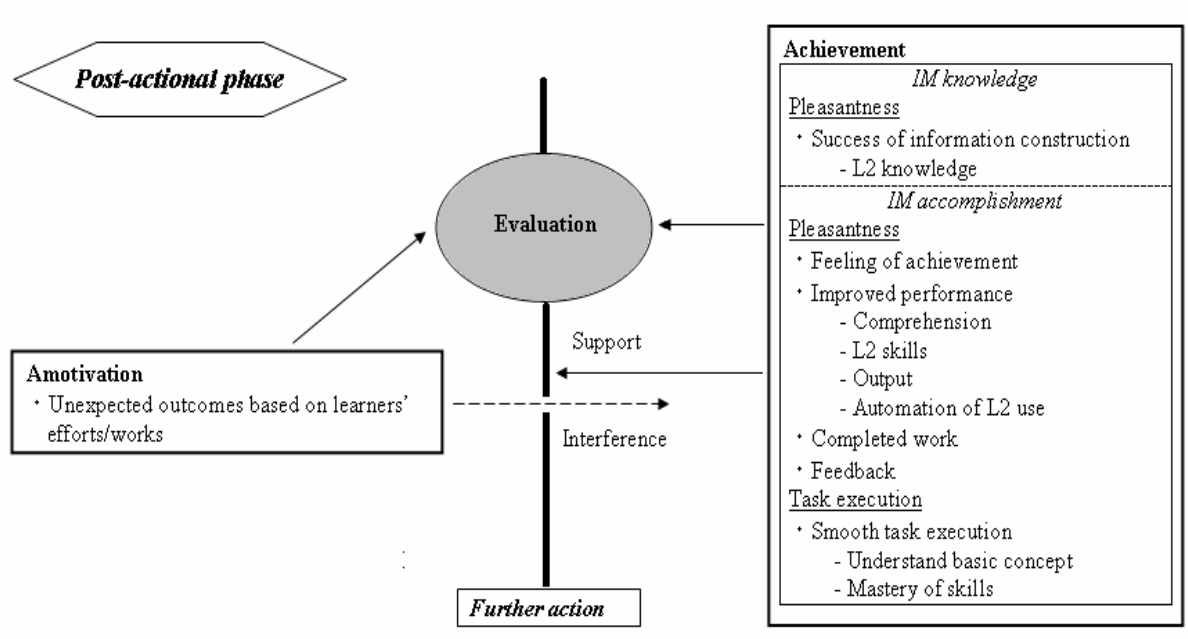


Figure 3.6. (Continued)

3.4. Summary and further implications

This section discussed the CALL motivational transfer model in classroom applications and for self-study purposes. First, a motivational model based on classroom CALL, L2 motivational studies and the data of CALL motivation studies were synthesized. The synthesis shows that the classroom application of CALL systematically influences L2 motivation, the systematic interrelations between macro dynamic mechanisms of motivation change and micro (temporal) level of the motivational state, and factors that can motivate learners positively. Based on this model, the self-study CALL motivation model is constructed with due consideration given to the differences between language learning in classrooms, or in academic settings, and by the learners studying on their own. To consider how self-study CALL can further motivate learners, the next chapter will consider the factors which will make the learning process more enjoyable for the students.

Chapter 4

Entertainment in Self-study CALL

This chapter seeks to examine how entertainment can be integrated into self-study CALL to improve learners' motivation. First, this chapter discusses what entertainment means and how it influences the target group. In addition, several preliminary studies, which partially apply entertainment in L2 classes, are considered to identify how to integrate entertainment factors into the self-CALL motivation model proposed in chapter 3.

4.1. General trend of entertainment

Entertainment describes "performances or activities that ["keep a group of people interested or amused" (Cambridge University Press, 2007.),] " (Cambridge University Press, 2007) and many people use entertainment in their leisure time (Vorderer, 2000). Entertainment has several forms: books, movies, newspapers, magazines, radio programs, video games, and internet (Vorderer, 2000).

Entertainment use is affected by the users' needs of entertainment in their lives and in certain situations. This variable is called *entertainment need*, which basically increases when people feel passive in a situation they face (Brock & Livingston, 2004). In addition, personality is one influential variable in entertainment preferences (2000). However, the discussion of personality is beyond the scope of this study (trait factors are not a main subject in this study), so this study does not emphasize the details of such individual differences in the further discussions. As one further premise, since CALL is a computer application method, this chapter focuses on computerized *entertainment media*.

4.2. Functions of entertainment media

This section explains the functions of the entertainment media, especially functions that may influence self-study CALL development. Based on the consideration of recent CALL applications, this chapter introduces the functions of music, movies, and video games, which are mainly used as components of CALL content.

Music

For many people, listening to popular music is a favourite leisure activity globally, and it has several physiological and psychological effects on listeners. Firstly, music promotes pleasant feelings as well as reduces unpleasant feelings (Hansen & Hansen, 2000). According to the authors, this psychological effect also induces physiological arousals. Moreover, music helps to develop identity of the self and the social group, which has a lasting effect. Listeners also receive information about society, and learn the expected social roles and behaviours of a certain group of people. Basically, this information is a reflection of its theme, especially in the lyrics. From the theme and lyrics as well as songs, sometimes the listeners receive positive emotions, but they also could receive negative emotions if the content of the music is not favourable (Hansen & Hansen, 2000).

Movies

Movies are produced to amuse viewers through a one-time experience – from opening to epilogue. In the movie, the viewers are given uncertain facts so as to stimulate curiosity, surprise, and suspense (Grodal, 2000). According to Grodal (2000), as the story evolves, the viewers are told facts, and in the end, the viewers receive the final point of the story. When the story ends, the viewers evaluate the facts from emotional, cognitive, and enactional arousals. The particular characteristic of a movie is that the viewers participate in the story as

a third person, so the movie is created to entertain the viewers under non-interaction conditions. To do so, a movie is created to arouse surprise by the events shown in this moment (Grodal, 2000).

Video games

Video games "provide simulations of a series of aspects of reality" (Grodal, 2000, p. 197). In contrast to movies, video games are interactive media through which players have freedom of control to communicate with the content or narratives (Grodal, 2000). Grodal (2000) mentions that this interaction enhances the learning process. In other words, the players learn rules and/or procedures, and through the process, they receive different outcomes based on the different inputs they can make; in particular, they receive new outcomes when they improve their skills and abilities to play the game. This process is similar to everyday life learning processes. Moreover, video game playing is an individual experience, since players receive different outcomes based on their control. Grodal (2000) also suggests that depending on the balance of players' skills and difficulties with the content, players may experience flow in the playing and its influences on emotion and cognition. These processes sometimes have negative effects; for example, players could become exhausted from playing (Grodal, 2000). Additionally, the images can affect users' attitudes, beliefs, and behaviour in the long term, which would have a negative effect as the viewers are unconsciously biased through the visual presentations (Wyer & Adaval, 2004), and this principle can apply to video game visual presentations, as well as movies.

Negative effects of entertainment media

In addition to the disadvantages of each media shown previously, general discussion of the negative effects of entertainment media shows that people exposed to violence in the media

content tend to be more tolerant of it in the real world (Wyer & Adaval, 2004). The studies (Grodal, 2000; Hansen & Hansen, 2000; Wyer & Adaval, 2004) further suggest that the potential negative effects are content based – violent content leads to violent action of user. Conversely, Grodal (2000) points out that long-term negative effects of these entertainment media have not been proven. Based on this research, it is advisable to consider the content, such as avoiding the materials including too many violent scenes; however, potential negative effects should not be overestimated so as not to lose positive benefit of entertainment media for learning.

4.3. Examples of entertainment media in L2 language curriculum

In the L2 curriculum, many attempts have been made to adopt foreign entertainment media, and scholars have researched its pedagogical advantages and practical effects. For example, Suggestopedia incorporated foreign entertainment media as a part of this method, to achieve its pedagogical goal – improving learners' communicative competence with decreasing learners' psychological barrier by creating a comfortable learning environment (Larsen-Freeman, 1987).

In addition to the psychological effects of foreign entertainment media, such as learners' motivational improvement, each medium possesses its own special pedagogical advantages. In terms of music, learners can interact with authentic language in daily life. In other words, music in the classroom can provide a learner-centred language learning environment because learners can naturally discuss music based on their own knowledge and language (Domoney & Harris, 1993). Moreover, Le (1999) showed several more advantages: it reinforces intra/inter-learner interaction, learner-teacher harmony, provides a material for cultural/inter-cultural understanding, and improves listening and speaking proficiency, as well as linguistic

awareness. However, even if music applications have great potential advantages, they also create some pedagogical problems. The major problem is that music is not created from language learning material, so often the speed of a song and expressions of the lyrics are not suitable for the target learners; especially low-level learners who would receive little benefit from study with music in terms of proficiency because music is too fast and pronunciation is too difficult to practice language by reproducing (Jarrell, 2001).

Movies have nearly the same advantages and disadvantages as the application of music in language learning – positive motivational effects, authenticity of material, improvement of listening and speaking skills, and difficulty in choosing the appropriate material for the target learners, especially for beginner learners (Higuchi, 1997; Yamanaka, 2002). In addition, Higuchi (1997) pointed out that movies can help to improve learners' communication skills since when watching a movie, learners are continuously receiving messages and they should choose messages effectively to understand the situation and main points easily. Yamanaka (2001) suggested movies can improve not only listening and speaking skills, but also writing, reading, and also translation and interpretation skills with effective use of the subtitle system and appropriate choice of titles and scenes.

In terms of video game application for L2 learning, Purushotma (2005) introduced *The Sims*, a video game that treats daily life as the content, as a model of vocabulary learning software. He pointed out that vocabulary used in the game is mostly the same as the vocabulary introduced in language class textbooks, which is directly related to daily life. *The Sims* introduces vocabulary in several multimedia ways such as text, graphics, etc, while some emotional events reinforce users' interest in continuing to play it. This increases learner involvement which influences effectiveness in L2 learning.

4.4. The model of entertainment self-study CALL

This section discusses how entertainment media can be used in self-study CALL as a motivating factor, and psychological functions of entertainment media can effectively influence motivational improvement through integration into self-study CALL.

Basically, entertainment media have been used originally in leisure activities – namely, having fun – so the learner may expect entertainment CALL to provide pleasure; and this expectation may influence the pre-actional motivation as a means of self-efficacy for the smooth task execution in an enjoyable environment. In other words, learners can expect to have a pleasant experience with the task using entertainment media, and this positive expectation will lead to successful L2 learning through enjoyable L2 experiences.

Music influences language attitude in the actional phase as an inducing stimulus of compatibility with self and social image. According to Hansen and Hansen (2000), music helps to develop self identity in the group, and this psychological stimulus would be positively evaluated by the learners as the input that enables them to reach their ideal self-image as well as respond to social norms in L2. This identity formation in L2 can be also interpreted as meaning that music can improve integrative motivation, which works as a motivating factor in the pre-actional phase, especially for the listeners who have a particular taste for foreign music and musicians. In other words, people are influenced by the lyrics and songs, reflections of underlying culture and messages by the musicians; and, through listening, people will want to reach an idealized culture and musicians' life style. This process can be regarded as L2 integrative motivational improvement through music medium.

Furthermore, music induces pleasantness and decreases unpleasantness (Hansen & Hansen,

2000), so listening to music, one form of a listening task, would cause pleasantness as a motivating stimulus which forms IM stimulation in the actional phase. This enjoyable experience also appears as a visible motivational behaviour because if learners enjoy themselves, they will naturally show their enjoyment through higher concentration on content or enthusiastically taking action. Moreover, through listening to music, people can improve their listening, speaking, and pronunciation skills, as well as linguistic knowledge (Le, 1999), which creates a pleasant experience in the form of achievement, or accomplishment. In other words, learners will build up their self-esteem when they improve their skills, and this will motivate the learners to take further actions. Furthermore, this improved performance will lead to the flow for the next learning experience (see figure 4.1. for details).

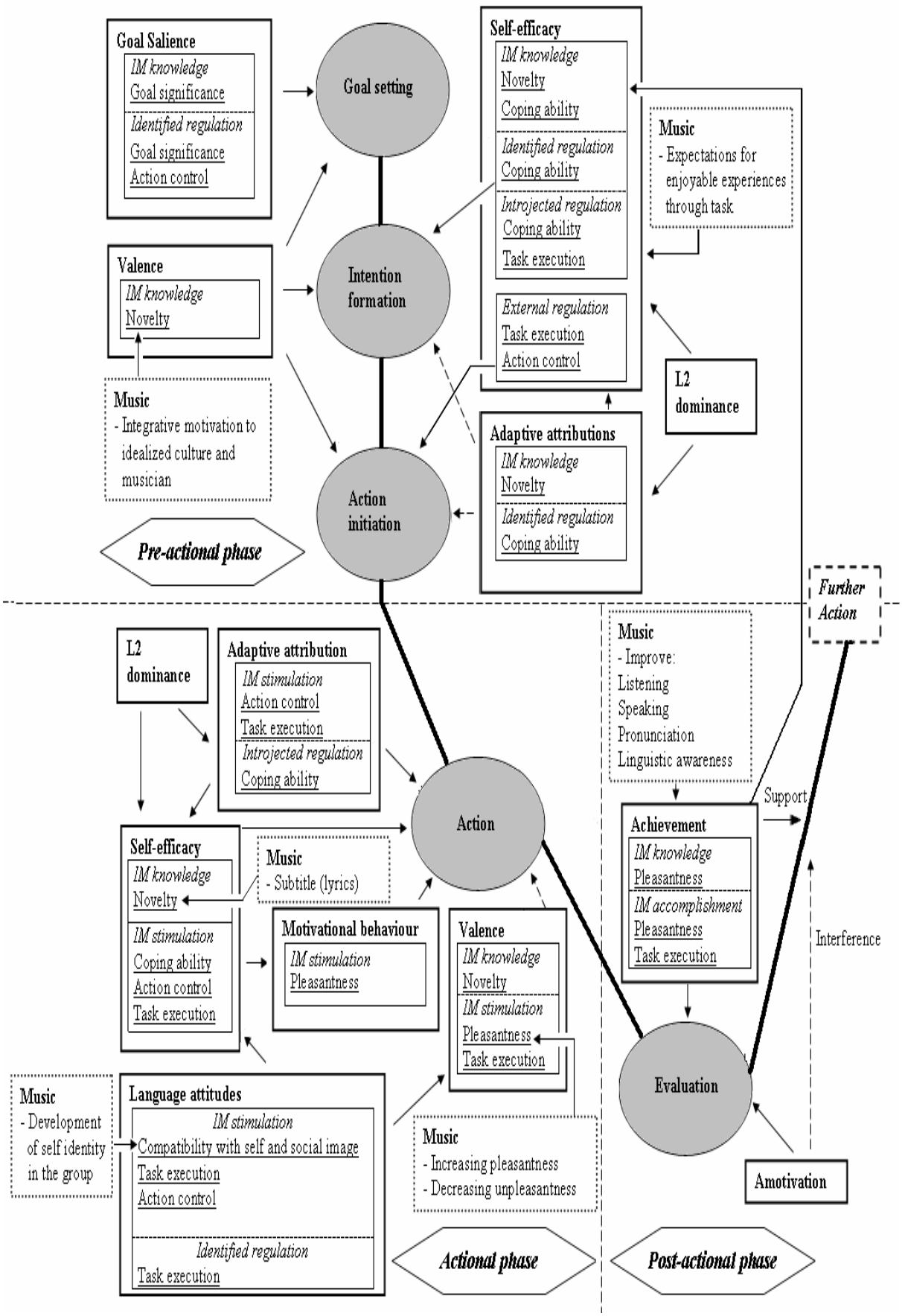


Figure 4.1. Motivational transfer through self-study CALL with music

A movie itself is motivating material, characteristics of which directly stimulate valence in the actional phase. The movie making techniques – continuous provision of curiosity, suspense, and surprise (Grodal, 2000) – stimulate pleasantness (interest) of viewers, and the authenticity of the content with effective presentation induces the stimulus of novelty as the means of L2 exposure. In addition, the viewers are continuously required to interact with the movie as a means of effective understanding of the content (Higuchi, 1997). This process can be intellectually challenging for the viewers, and it also affects IM stimulation in the actional phase since an intellectually challenging task is one motivating factor revealed in the previous chapter.

Moreover, watching movies improves listening and speaking skills similarly to music listening. In addition to improving sound based language skills, effective use of subtitles can also improve writing, translation, and interpretation skills (Yamanaka, 2001). These improved performances lead to pleasantness in the post-actional phase, as well as next flow in a next action (see figure 4.2.)

Generally, L2 exposure to music and movies is a passive activity, but when these activities are integrated into a CALL-based project, users' control is increased, and this motivates users through the improvement of self-efficacy. For example, subtitles of lyrics or movie scripts can improve learning environment as an easy referencing system of the text-based information,

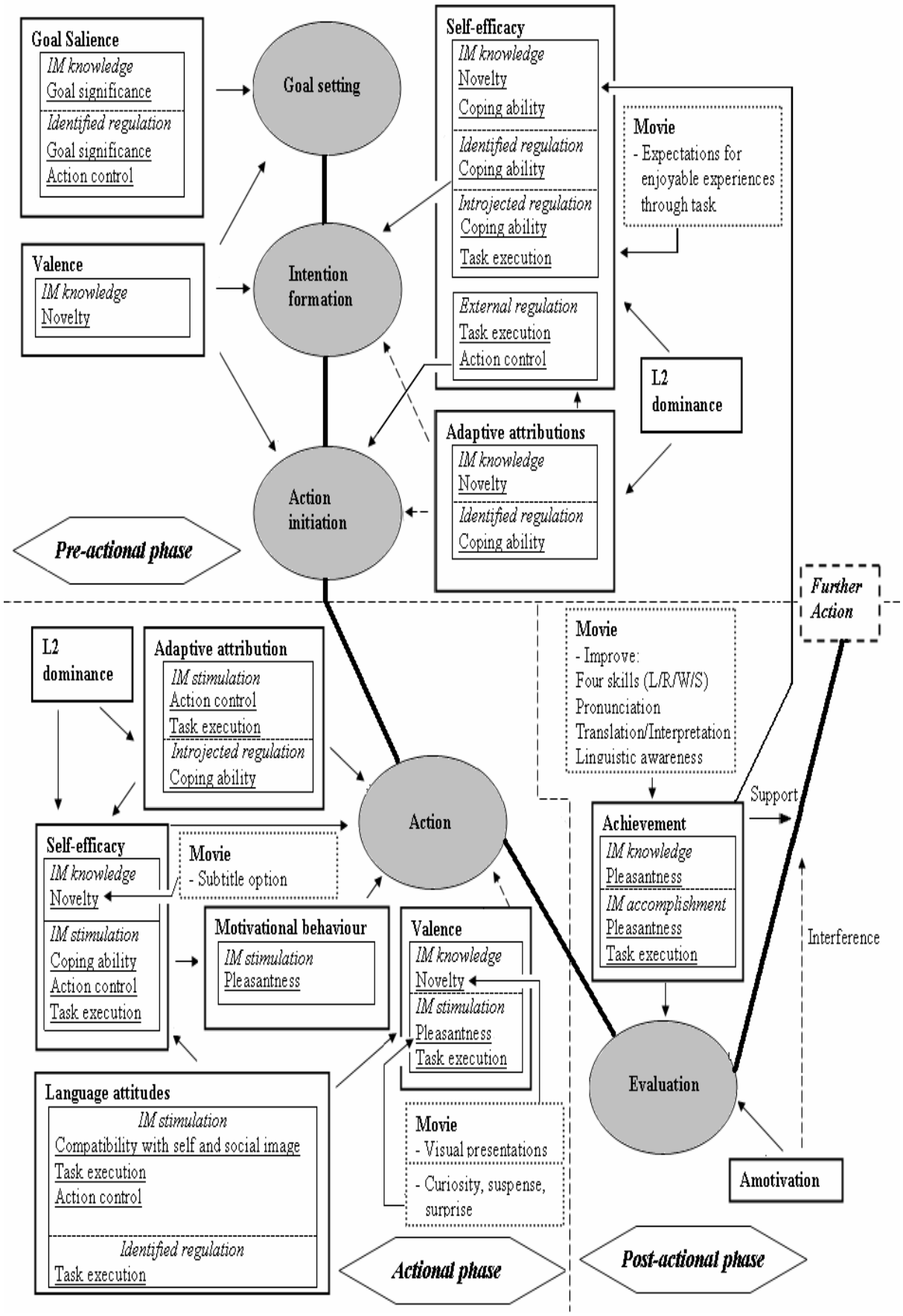


Figure 4.2. Motivational transfer through self-study CALL with movies

Video games are typical interactive entertainment media (Grodal, 2000), and the control flexibility of video games matches a motivating factor of empowerment in self-study CALL motivation. This improves self-efficacy in the actional phase as the means of stimulating task execution stimulus: if learners can control the program effectively, the learners would be able to gain more success since they can receive the necessary information. In addition to this motivational influence, similar to movies, video games improve valence, as well as motivational behaviour and performance, with the same mechanisms (see figure 4.3.).

To apply entertainment media into self-study CALL, several considerations ought to be discussed. First, the level of content which is a critical factor to induce flow. Empirical studies point out that sometimes learners face difficulty in understanding content because of an inappropriate language level (Higuchi, 1997; Jarrell, 2001; Yamanaka, 2002). The difficulty of understanding interferes with the flow of the task, and it also decreases self-efficacy and adaptive attributions, so the content must be carefully chosen based on the consideration of target learners and the content.

Second, the theme and expressions used is another issue. Risky content, which could induce users' sense of aversion, may lead to the loss of motivation, or even increase avoidance of using a particular program. Therefore, content should avoid such expressions; in particular, acute expressions of violence, sex, and cultural defamation.

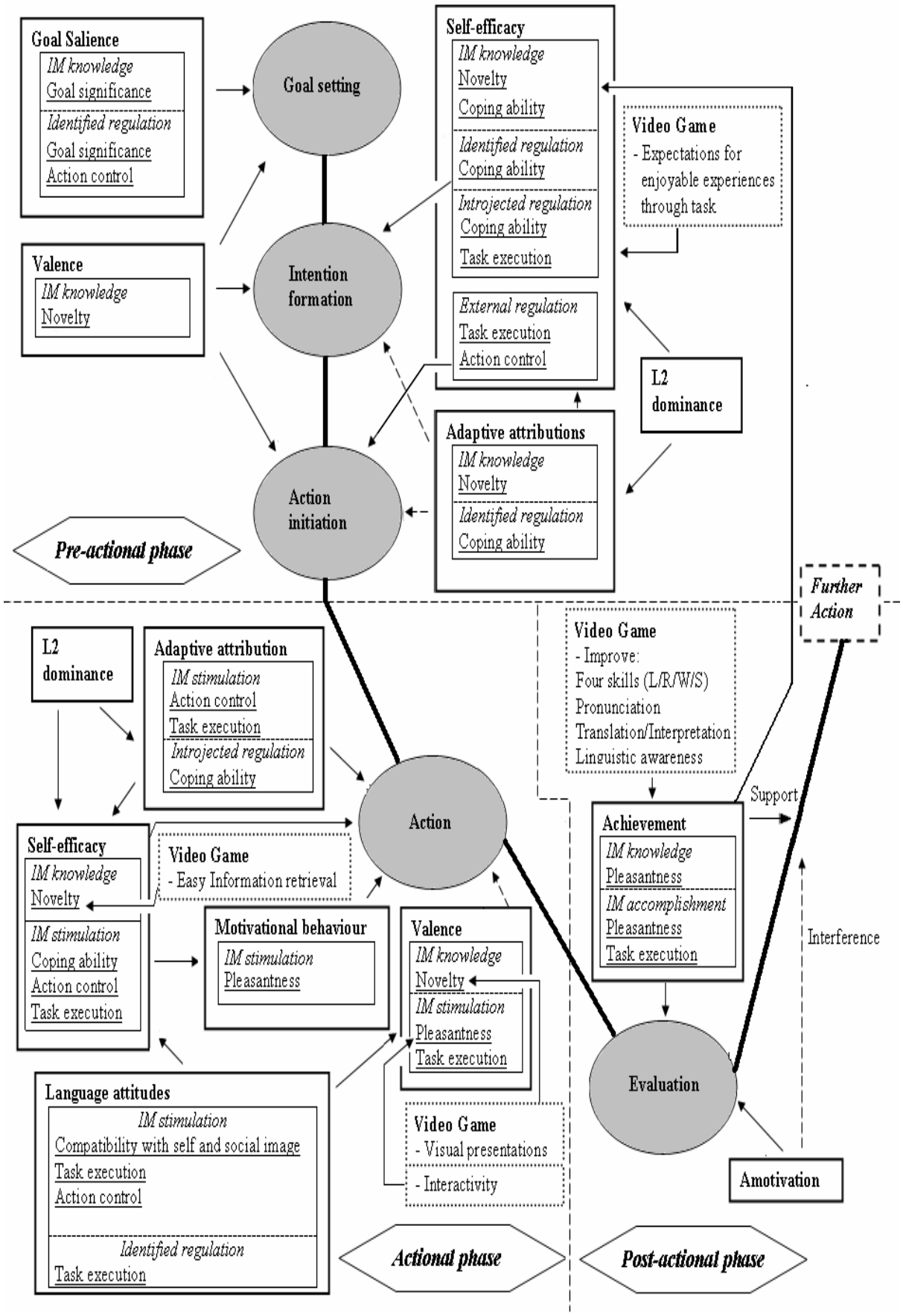


Figure 4.3. Motivational transfer through self-study CALL with video games

In content creation, which is directly connected to the learners' evaluation of tasks, influencing valence in the actional phase, humour and comedy are frequently used to enhance interest. Not only for their amusement effect, humour and comedy also have relaxation effects, since the listeners can be amused by transforming unimportant matters into amusing phenomena, while decreasing psychological tension (Zillmann, 2000); this technique can also be effective in self-study CALL development, since these relaxation effects may reduce stress, a factor that lead to demotivation. However, *superiority theory*, a psychological theory of humour and comedy, suggests that if a colleague group is portrayed as superior, and the opponent group is portrayed as inferior, the amusement is maximized, and vice versa (Zillmann, 2000), so humour and comedy should not suggest inferiority of L1 language and cultures as a means of emphasising L2 cultures.

Storytelling is one of the core components of entertainment media. The experiences gained through a story correspond with everyday life, so understanding stories is easier than understanding scripts in other genres (such as text addressing logical or abstract discussions) (Graesser, Olde, & Klettke, 2002). In addition, Schank & Berman (2002) further argue that people transform experiences into stories to store these experiences in their memory and help to understand them. Understanding abstract principles is difficult because they generally do not provide sufficient cues to comprehension. On the contrary, a story provides a scheme and more cues and details that help people to understand the given information (Schank & Berman, 2002). Moreover, in some cases, attitudes and behaviour are affected by story telling rather than by conventional persuasions (Slater, 2002). Storytelling, as an example showing these advantages, has been used to transmit wisdom in many cultures from generation to generation (Grasser, Olde, & Klettke, 2002). Based on this evidence, storytelling in the entertainment media can be used as an effective method to improve learning. This principle is

also applicable to language learning, and this is the advantage of story use in language learning since learners need to acquire many rules, including abstract concepts of the target language, and this technique may enable learners to accumulate this knowledge more effectively. However, for effective learning, the story must be well told (Grasser, Olde, & Klettke, 2002).

There are several types of stories, and both factual and fictional types of stories have the same function in memory construction (Schank & Berman, 2002). So both types of stories are effective in supporting learning. In other words, fiction has the same persuasiveness as non-fiction, and sometimes people receive fictional information automatically more than non-fictional information (Green, Garst, & Brock, 2004) even if the author does not have the intention of asserting particular information (Strange, 2004). Therefore, the content should not give misinformation even when using fictional descriptions. In language learning, stereotypical information about L2 people and culture is general misinformation that should be avoided.

Chapter 5

Conclusion

In conclusion, this thesis investigated how entertainment can be incorporated into self-study CALL to improve learners' motivation effectively and systematically. To answer this research question, this thesis followed three steps. First, integration of L2 motivation theories and the results of classroom CALL application studies addressing motivation as a subject matter. Although there are a limited number of studies, the integration and analysis revealed systematic mechanisms of motivational transfer through CALL applications. In addition, concrete factors that can influence L2 motivation, and how and when, were found. A model of motivational change through CALL application in classroom with the concrete constructs was developed.

Second, based on theoretical discussion, the motivational transfer through CALL application in the classroom was adopted to self-study purpose CALL. With few exceptions, both classroom and self-study CALL provide learning environments using the computer medium setting. In other words, computers are set in L2 use between people. Therefore, almost all of the factors in CALL classroom application can be directly transported to self-study CALL. Self-study does not expect the existence of other learners and the factors related to inter-learner situation are left out of the self-study CALL model.

Third, in terms of entertainment use, entertainment media is the main concern in this study because CALL is the application of the computer as a multimedia device. Entertainment media has systematic functions of influencing the user. With the previous studies of entertainment use in L2 learning settings, the systematic mechanisms of self-study

entertainment CALL motivational transfer is proposed.

Three pedagogical implications can be indicated by the previous discussions. First, entertainment in CALL can be used as motivating self-study material for L2 learning. Second, entertainment in CALL can serve as material to practice L2 skills more effectively than the more general type of CALL. Characteristics of entertainment media could increase learning effectiveness. Third, entertainment in CALL can also be applied to inter-cultural understanding education. Authenticity and entertainment techniques help learners to understand L2 people and culture more effectively. In the real world, the developers or educators who choose to use this method should keep in mind that for effective learning, the content should fit the target learners in terms of level of language and content; otherwise, L2 learning might be unsuccessful

Since the models suggested in this study are theoretical, these models should be verified by real applications and experimental research. In addition, because of the reliance on the limited numbers of published studies that mainly observed motivational influence through CALL applications, some real aspects of CALL application might be over generalized or oversimplified.

Due to these limitations, further research is suggested to improve the validity of the models. For example, experimental research observing self-study learners in the CALL medium environment and the non-CALL environment can verify the motivational functions of self-study CALL. In addition, comparison between entertainment applied and non-applied in CALL can support the motivating effect of entertainment. In this case, long-term experiments are recommended since learners seem to be able to maintain learning motivation over a short

period. For this research, educational content, such as target level and concept, should be equal to measure the effect of entertainment properly without interfering with other conditions. Moreover, in addition to verifying the quality of the models, there is still need to research other factors that could improve L2 motivation; and the further research that applies extra conditions, such as new methodology in second language teaching field, would find additional motivating factors entailed in self-study CALL.

Even if some limitations exist, this study and its findings may be a milestone that helps to understand, develop, and implement effective motivating CALL for self-study purposes by integrating entertainment aspects in its content.

References

Appel, C., & Gilabert, R. (2002). Motivation and task performance in a task-based web-based tandem project. *ReCALL, 14*(1), 16-31.

Beauvois, M. H. (1994). E-talk: Attitudes and motivation in computer-assisted classroom discussion. *Computers and the Humanities, 28*(3), 177-190.

Bradin, C. (1999). Call issues: instructional aspects of software evaluation. In J. Egbert & E. Hanson-Smith (Eds.), *CALL environments: Research practice and critical issues* (pp. 159-175). Alexandria, VA: TESOL.

Brock, T. C., & Livingston, S. D. (2004). The needs for entertainment scale. In L. J. Shrum (Ed.), *The psychology of entertainment media* (pp. 255-274). Mahwah, NJ: Lawrence Erlbaum Associates.

Cambridge University Press. (2007). *Cambridge advanced learner's dictionary*. Retrieved May 21, 2007, from http://dictionary.cambridge.org/define.asp?key=25862& dict=CALD

Chang, M. M. (2005). Applying self-regulated leering strategies in a web-based instruction - An investigation of motivation perception. *Computer Assisted Language Learning, 18*(3), 217-230.

Cook, V. (2001). *Second language learning and language teaching*. London: Arnold.

Domoney, L., & Harris, S. (1993). Justified and ancient: Pop music in EFL classrooms. *ELT Journal, 47*(3), 234-241.

Dörnyei, Z. (1994). Motivation and motivating in the foreign language classroom. *Modern Language Journal, 78*(3), 273-284.

Dörnyei, Z. (2000). Motivation in action: Towards a process-oriented conceptualization of student motivation. *British Journal of Educational Psychology, 70*, 519-538.

Dörnyei, Z. (2001a). New themes and approaches in second language motivation research.

Annual Review of Applied Linguistics, 21, 43-59.

Dörnyei, Z. (2001b). *Teaching and researching motivation*. Essex: Pearson Education Limited.

Dörnyei, Z. (2003). Attitudes, orientations, and motivations in language learning. In Z. Dörnyei (Ed.), *Attitudes, orientations, and motivations in language learning* (pp. 3-32). Oxford: Blackwell.

Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition*. London: Lawrence erlbaum associates.

Dörnyei, Z., & Ottó, I. (1998). Motivation in action: A process model of L2 motivation. *Working Papers in Applied Linguistics, 4*, 43-69.

Egbert, J. (2003). A study of flow theory in the foreign language classroom. *Modern Language Journal, 87*(4), 499-518.

Egbert, J. (2005). *CALL essentials: Principles and practice in CALL classrooms*. Alexandria VA: TESOL.

García, M. R., & Arias, F. V. (2000). A comparative study in motivation and learning through print-oriented and computer-oriented tests. *Computer Assisted Language Learning, 13*(4-5), 457-465.

Gardner, R. C., Tremblay, P. F., & Masgoret, A.-M. (1997). Towards a full model of second language learning: An empirical investigation. *Modern Language Journal, 81*(3), 344-362.

Gass, S. M., & Selinker, L. (2001). *Second language acquisition: An introductory course* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Graesser, A. C., Olde, B., & Klettke, B. (2002). How does the mind construct and represent stories? In M. C. Green, J. J. Strange & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 229-262). Mahwah, NJ: Lawrence Erlbaum Associates.

Green, M. C., Garst, J., & Brock, T. C. (2004). The power of fiction: Determinants and boundaries. In L. J. Shrum (Ed.), *The psychology of entertainment media* (pp. 161-176). Mahwah, NJ: Lawrence Erlbaum Associates.

Grodal, T. (2000). Video games and the pleasures of control. In D. Zillmann & P. Vorderer (Eds.), *Media entertainment: The psychology of its appeal* (pp. 197-213). Mahwah, NJ: Lawrence Erlbaum Associates.

Hansen, C. H., & Hansen, R. D. (2000). Music and music videos. In D. Zillmann & P. Vorderer (Eds.), *Media entertainment: The psychology of its appeal* (pp. 175-196). Mahwah, NJ: Lawrence Erlbaum Associates.

Healey, D., & Johnson, N. (1997). A place to start in selecting software. *CAELL Journal, 8*(1), 3-9.

Higuchi, M. (1997). Using film as authentic spoken texts. *Shizuoka Woman's College Bulletin, 11*(1), 59-69.

Hubbard, P. (1987). Language teaching approaches, the evaluation of CALL software, and design implications. In W. F. Smith (Ed.), *Modern media in foreign language education: Theory and implementation* (pp. 227-254). Lincolnwood, Ill: National Textbook Company.

Jarrell, D. (2001). Motivational effects of English songs. *Nagoya Woman's University Bulletin, 47*, 241-248.

Jerrell, D., & Freiermuth, M. R. (2005). The motivational power of Internet chat. *RELC, 36*(1), 59-72.

Julkunen, K. (2001). Situation- and task- specific motivation in foreign language learning. In Z. Dörnyei & R. Schmidt (Eds.), *Motivation and second language acquisition* (pp. 29-41). Honolulu: University of Hawai'i, Second Language Teaching and Curriculum Center.

Knowles, S. (1992). Evaluation of CALL software: A checklist of criteria for evaluation. *On-CALL, 6*(2), 9-20.

Kormos, J., & Dörnyei, Z. (2004). The interaction of linguistic and motivational variables in second language task performance. *Zeitschrift für Interkulturellen Fremdsprachenunterricht, 9*(2), Retrieved May 9, 2007, from http://www.alberta.ca/ ~german/ejournal/kormos2.htm

Kotter, M. (2006). Language education and networked online environment. In R. P. Donaldson & M. A. Haggstrom (Eds.), *Changing language education through CALL* (pp. 169-195). New York, NY: Routledge.

Lai, C.-C., & Kristonis, W. A. (2006). The advantages and disadvantages of computer technology in second language acquisition. *National Journal for Publishing and Mentoring Doctoral Student Research, 3*(1), 1-6.

Larsen-Freeman, D. (1987). Recent innovations in language teaching methodology. *Annals of the American Academy of Political and Social Science, 490*, 51-69.

Le, M. H. (1999). *The role of music in second language learning: A Vietnamese perspective*. Paper presented at the Conference of the Australian Association for Research in Education and the New Zealand Association for Research in Education. Retrieved December 18, 2006, from http://www.aare.edu.au/99pap/ le99034.htm.

Levy, M. (2006). Effective use of CALL technologies: Finding the right balance. In R. P. Donaldson & M. A. Haggstrom (Eds.), *Changing language education through CALL* (pp. 1-18). New York, NY: Routledge.

MacIntyre, P. D., Clément, R., Dörnyei, Z., & Noels, K. A. (1998). Conceptualizing willingness to communicate in a L2: A situated model of confidence and affiliation. *Modern Language Journal, 82*(4), 545-562.

Mark, K. (2005). Motivation, the Japanese Freshman University student and Foreign

Language Acquisition. *JALT Hokkaido Journal, 9*, 32-47.

McGroarty, M. (2001). Situating second language motivation. In Z. Dörnyei & R. Schmidt (Eds.), *Motivation and second language acquisition* (pp. 69-91). Honolulu: University of Hawai'i, Second Language Teaching and Curriculum Center.

Murray, L., & Barnes, A. (1998). Beyond the "wow" factor - evaluating multimedia language learning software from a pedagogical viewpoint. *System, 26*(2), 249-259.

Noels, K. A., Clément, R., & Pelletier, L. G. (1999). Perceptions of teachers' communicative style and students' intrinsic and extrinsic motivation. *Modern Language Journal, 83*(1), 23-34.

Noels, K. A., Pelletier, L. G., Clément, R., & Vallerand, R. J. (2003). Why are you learning a second language? Motivational orientations and self-determination theory. In Z. Dörnyei (Ed.), *Attitudes, orientations, and motivations in language learning* (pp. 33-64). Oxford: Blackwell.

Okan, Z. (2003). Edutainment: is learning at risk? *British Journal of Educational Technology, 34*(3), 255-264.

Oxford, R. L. (1996). New pathways of language learning motivation. In R. L. Oxford (Ed.), *Language learning motivation: Pathways to the new century* (pp. 1-8). Honolulu: University of Hawai'i, Second Language Teaching and Curriculum Center.

Prescott, D. L. (2001). *Developing evaluation instruments for CALL software and English second language websites with pre-service English second language teachers*. Paper presented at the ITMELT 2001 Conference. Retrieved May 9, 2007, from http://elc.polyu.edu.hk/conference/papers2001/prescott.htm.

Purushotma, R. (2005). Commentary: You're not studying, you're just... *Language Learning & Technology, 9*(1), 80-96.

Reinders, H., & Lewis, M. (2006). An evaluative checklist for self-access materials. *ELT*

Journal, 60(3), 272-278.

Salaberry, M. R. (2001). The use of technology for second language learning and teaching: A retrospective. *Modern Language Journal, 85*(1), 39-56.

Schank, R. C., & Berman, T. R. (2002). The pervasive role of stories in knowledge and action. In M. C. Green, J. J. Strange & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 287-313). Mahwah, NJ: Lawrence Erlbaum Associates.

Scholfield, P. J. (n.d.). Evaluation of CALL software. Retrieved May 9, 2007, from http://privatewww.essex.ac.uk/~scholp/calleval.htm

Schumann, J. H. (2001a). Appraisal psychology, neurobiology, and language. *Annual Review of Applied Linguistics, 21*, 23-42.

Schumann, J. H. (2001b). Learning as Foraging. In Z. Dörnyei & R. Schmidt (Eds.), *Motivation and second language acquisition* (pp. 21-48). Honolulu: University of Hawai'i, Second Language Teaching and Curriculum Center.

Slater, M. D. (2002). Entertainment education and the persuasive impact of narratives. In M. C. Green, J. J. Strange & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 157-181). Mahwah, NJ: Lawrence Erlbaum Associates.

Sprenger, R. (n.d.). *Criteria for selecting language software*. Retrieved May 9, 2007, from http://www.wfi.fr/volterre/sprenger.html

Strange, J. J. (2002). How fictional tales wag real-world beliefs. In M. C. Green, J. J. Strange & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 263-286). Mahwah, NJ: Lawrence Erlbaum Associates.

Takeuchi, O. (2007). *自ら学ぶ姿勢を身につけるには－自主学習の必要性とその方法を探る－* [Promoting autonomous learning: Its necessity and methodology]. *Teaching English Now, 8*, 2-5. Tokyo: Sanseido.

Tremblay, P. F., & Gardner, R. C. (1995). Expanding the motivation construct in language

learning. *Modern Language Journal, 79*(4), 505-520.

Tremblay, P. F., Goldberg, M. P., & Gardner, R. C. (1995). Trait and state motivation and the acquisition of Hebrew vocabulary. *Canadian Journal of Behavioural Science, 27*(3), 356-370.

Vorderer, P. (2000). Interactive entertainment and beyond. In D. Zillmann & P. Vorderer (Eds.), *Media entertainment: The psychology of its appeal* (pp. 21-36). Mahwah, NJ: Lawrence Erlbaum Associates.

Warschauer, M. (1996). Motivational aspects of using computers for writing and communication. In M. Warschauer (Ed.), *Telecollaboration in foreign language learning: Proceedings of the Hawai'i symposium* (pp. 29-46). Honolulu: University of Hawai'i, Second Language Teaching & Curriculum Center.

Weaver, J. B. (2000). Personality and entertainment preferences. In D. Zillmann & P. Vorderer (Eds.), *Media entertainment: The psychology of its appeal* (pp. 235-248). Mahwah, NJ: Lawrence Erlbaum Associates.

Wood, D. (1998). *"Video on demand in TEFL: Education or Edutainment?"* Retrieved February 1, 2007, from http://eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/11/52/2c.pdf

Wyer, R. S., & Adaval, R. (2004). Pictures, words, and media influence: The interactive effects of verbal and nonverbal information on memory and judgments. In L. J. Shrum (Ed.), *The psychology of entertainment media* (pp. 137-159). Mahwah, NJ: Lawrence Erlbaum Associates.

Yamanaka, M. (2003). The use of movies in EFL tuition. *Gife Woman's College Bulletin, 3*, 43-49.

Zillmann, D. (2000). Humor and comedy. In D. Zillmann & P. Vorderer (Eds.), *Media entertainment: The psychology of its appeal* (pp. 37-57). Mahwah, NJ: Lawrence

Erlbaum Associates.

Appendices

Appendix A

The items in Beauvois' (1995) study

No.	Item
1	Students monitor use of grammar to express themselves
2	Students experience increased comprehension
3	Students experience increased reading practice
4	*Students appreciate opportunity for writing practice
5	Students express some transfer of writing skills to speaking
6	*Students experience increased output
7	*Students enjoy conversational aspect of electronic interaction
8	Students give evidence of automaticity
9	*Students feel less stress than in the classroom
10	*Students have adequate time to think, and compose message
11	*Students feel empowered to control the conversational task
12	*Everyone always has a fun
13	*Students experience greater ease of communication
14	*The network allows for individual learning styles
15	*Students express a positive reaction and claim to enjoy the experience
16	*Students get to know classmates better
17	Students experience opportunities for "real" conversation on the LAN
18	Male students' are perceived as less "Qmacho," more sensitive, more talkative
19	*Students perceive existence of "rules" for exclusive use of French
20	*Students feel compelled to participate on the network
21	*Students observe that English is almost never used on the network

* strong factor

Appendix B

The items in Warschauer' (1996) study

No.	Item
1	*I can write better essays when I do them on computer
2	*Revising my papers is a lot easier when I write them on computer
3	I enjoy writing my papers on computer more than by hand
4	*I enjoy seeing the things I write printed out
5	Writing papers by computer saves time compared to by hand
6	*I enjoy using the computer to communicate with people around the world
7	*I enjoy using the computer to communicate with my classmates
8	*I am less afraid to contact people by e-mail than in person
9	*I enjoy using the computer to communicate with my teacher
10	*E-mail helps people learn from each other
11	*An advantage of e-mail helps me develop my thoughts and ideas
12	*Writing to others by e-mail helps me develop my thoughts and ideas
13	*Using e-mail and the Internet makes me feel part of a community
14	*Using e-mail and the Internet is a good way to learn more about different people and cultures
15	*Communicating by e-mail is a good way to improve my English
16	*Learning to use a computer gives me a feeling of accomplishment
17	*Writing by computer makes me more creative
18	*Using a computer gives me more chances to read and use authentic English
19	*I want to continue using a computer in my English classes
20	*Using a computer is worth the time and effort
21	*Using a computer gives me more control over my learning
22	*I enjoy the challenge of using computers
23	*Learning how to use computers is important for my career
24	I can learn English more independently when I use a computer
25	Computers help people overcome isolation
26	I can learn English faster when I use a computer
27	*Using a computer gives me more chances to practice English
28	Computers are not usually frustrating to work with
29	*Computers help people overcome weakness and powerlessness

* strong factor

Appendix C

The items in Chang's (2005) study

No.	Item
1	*In a class like this, I prefer course material that really challenges me so I can learn new things
2	*In a class like this, I prefer course materials that arouse my curiosity, even if it is difficult to learn
3	*The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible
4	*When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade
5	*It is important for me to learn the course material in this class
6	*Understanding the subject matter of this course is very important to me
7	*I think I will be able to use what I learned in this course in other courses
8	*I think the course material in this class is useful for me to learn
9	I like the subject matter of this course
10	*I am very interested in the content area of this course
11	*If I study in appropriate ways, then I will be able to learn the material in this course
12	*If I try hard enough, then I will understand the course materials
13	*It is my own fault if I don't learn the material I this course
14	*If I don't understand the course material, it is because I didin't try hard enough
15	*I expect to do well in this class
16	*I'm confident I can understand the basic concepts taught in this course
17	*I'm certain I can master the skills being taught in this class
18	Considering the difficulty of this course and my skills, I think I will do well in this class
19	I'm confident I can do an excellent job on the assignments and tests in this course
20	I believe I will receive an excellent grade in this class

* strong factor

Appendix D

The interrelations between Beauvois' (1995) study and L2 motivational theories

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
1	Students monitor use of grammar to express themselves	Achievement	IM knowledge	Pleasantness	Performance	Post-actional phase
2	Students experience increased comprehension	Achievement	IM accomplishment	Pleasantness	Performance	Post-actional phase
3	Students experience increased reading practice	Achievement	IM accomplishment	Pleasantness	Performance	Post-actional phase
4	*Students appreciate opportunity for writing practice	Motivational behaviour	IM stimulation	Pleasantness	Task/Flow	Actional phase
5	Students express some transfer of writing skills to speaking	Achievement	IM accomplishment	Pleasantness	Performance	Post-actional phase
6	*Students experience increased output	Achievement	IM accomplishment	Pleasantness	Performance	Post-actional phase
7	*Students enjoy conversational aspect of electronic interaction	Motivational behaviour	IM stimulation	Pleasantness	Task/Flow	Actional phase
8	Students give evidence of automaticity	Achievement	IM accomplishment	Pleasantness	Performance	Post-actional phase
9	*Students feel less stress than in the classroom	Self-efficacy	IM stimulation	Action control	Task/Flow	Actional phase
10	*Students have adequate time to think, and compose message	Adaptive attributions	IM stimulation	Task execution	Task/Flow	Actional phase

Appendix D (Continued)

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
11	*Students feel empowered to control the conversational task	Adaptive attributions	IM stimulation	Action control	Task/Flow	Actional phase
12	*Everyone always has a fun	Motivational behaviour	IM stimulation	Pleasantness	Task/Flow	Actional phase
13	*Students experience greater ease of communication	Self-efficacy	IM stimulation	Action control	Task/Flow	Actional phase
14	*The network allows for individual learning styles	Self-efficacy	IM stimulation	Action control	Task/Flow	Actional phase
15	*Students express a positive reaction and claim to enjoy the experience	Motivational behavior	IM stimulation	Pleasantness	Task/Flow	Actional phase
16	*Students get to know classmates better	Achievement	IM knowledge	Pleasantness	Performance	Post-actional phase
17	Students experience opportunities for "real" conversation on the LAN	Valence	IM stimulation	Pleasantness	Task/Flow	Actional phase
18	Male students' are perceived as less "Qmacho," more sensitive, more talkative	Self-efficacy	IM stimulation	Action control	Task/Flow	Actional phase
19	*Students perceive existence of "rules" for exclusive use of French	Language attitudes	Introjected regulation	Task execution	Task/Flow	Actional phase
20	*Students feel compelled to participate on the network	Language attitudes	Introjected regulation	Task execution	Task/Flow	Actional phase
21	*Students observe that English is almost never used on the network	Language attitudes	Introjected regulation	Task execution	Task/Flow	Actional phase

* strong factor

Appendix E

The interrelations between Warschauer's (1996) study and L2 motivational theories

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
1	*I can write better essays when I do them on computer	Self-efficacy	External regulation	Task execution	Performance	Pre-actional phase
2	*Revising my papers is a lot easier when I write them on computer	Self-efficacy	External regulation	Task execution	Performance	Pre-actional phase
3	I enjoy writing my papers on computer more than by hand	Motivational behaviour	IM stimulation	Pleasantness	Task/Flow	Actional phase
4	*I enjoy seeing the things I write printed out	Achievement	IM accomplishment	Pleasantness	Performance	Post-actional phase
5	Writing papers by computer saves time compared to by hand	Self-efficacy	External regulation	Task execution	Performance	Pre-actional phase
6	*I enjoy using the computer to communicate with people around the world	Motivational behaviour	IM stimulation	Pleasantness	Task/Flow	Actional phase
7	*I enjoy using the computer to communicate with my classmates	Motivational behaviour	IM stimulation	Pleasantness	Task/Flow	Actional phase
8	*I am less afraid to contact people by e-mail than in person	Self-efficacy	External regulation	Task execution	Task/Flow	Pre-actional phase
9	*I enjoy using the computer to communicate with my teacher	Motivational behaviour	IM stimulation	Pleasantness	Task/Flow	Actional phase
10	*E-mail helps people learn from each other	Language attitudes	IM stimulation	Task execution	Task/Flow	Actional phase

Appendix E (Continued)

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
11	*An advantage of e-mail helps me develop my thoughts and ideas	Self-efficacy	IM knowledge	Novelty	Task/Flow	Pre-actional phase
12	*Writing to others by e-mail helps me develop my thoughts and ideas	Self-efficacy	IM knowledge	Novelty	Task/Flow	Pre-actional phase
13	*Using e-mail and the Internet makes me feel part of a community	Language attitudes	IM stimulation	Compatibility with self and social image	Task/Flow	Actional phase
14	*Using e-mail and the Internet is a good way to learn more about different people and cultures	Valence	IM knowledge	Novelty	Task/Flow	Pre-actional phase
15	*Communicating by e-mail is a good way to improve my English	Self-efficacy	IM knowledge	Coping ability	Task/Flow	Pre-actional phase
16	*Learning to use a computer gives me a feeling of accomplishment	Achievement	IM accomplishment	Pleasantness	Performance	Post-actional phase
17	*Writing by computer makes me more creative	Self-efficacy	IM knowledge	Coping ability	Performance	Pre-actional phase
18	*Using a computer gives me more chances to read and use authentic English	Self-efficacy	IM knowledge	Novelty	Task/Flow	Pre-actional phase
19	*I want to continue using a computer in my English classes	Motivational behaviour	IM stimulation	Pleasantness	Task/Flow	Actional phase
20	*Using a computer is worth the time and effort	Self-efficacy	External regulation	Task execution	Task/Flow	Pre-actional phase

Appendix E (Continued)

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
21	*Using a computer gives me more control over my learning	Self-efficacy	IM stimulation	Action control	Task/Flow	Actional phase
22	*I enjoy the challenge of using computers	Valence	IM stimulation	Pleasantness	Task/Flow	Actional phase
23	*Learning how to use computers is important for my career	Goal salience	Identified regulation	Goal significance	Task/Flow	Pre-actional phase
24	I can learn English more independently when I use a computer	Self-efficacy	External regulation	Action control	Task/Flow	Pre-actional phase
25	Computers help people overcome isolation	Language attitudes	IM stimulation	Action control	Task/Flow	Actional phase
26	I can learn English faster when I use a computer	Self-efficacy	External regulation	Coping ability	Performance	Pre-actional phase
27	*Using a computer gives me more chances to practice English	Self-efficacy	IM knowledge	Coping ability	Task/Flow	Pre-actional phase
28	Computers are not usually frustrating to work with	Adaptive attributions	IM stimulation	Task execution	Task/Flow	Actional phase
29	*Computers help people overcome weakness and powerlessness	Adaptive attributions	IM stimulation	Action control	Task/Flow	Actional phase

* strong factor

Appendix F

The interrelations between García and Arias's (2000) study and L2 motivational theories

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
1	Easy access to the references for essential information (Grammar/Vocabulary /Listening)	Self-efficacy	IM knowledge	Novelty	Task/Flow	Actional phase
2	Easy access to the reference for extra information (Culture)	Valence	IM knowledge	Novelty	Task/Flow	Actional phase
3	Easy continuous practices	Self-efficacy	IM stimulation	Task execution	Task/Flow	Actional phase
4	Achievement	Achievement	IM accomplishment	Pleasantness	Performance	Post-actional phase

Appendix G

The interrelations between Appel and Gilabert's (2002) study and L2 motivational theories

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
1	Interesting Topics	Valence	IM stimulation	Pleasantness	Task/Flow	Actional phase
2	Appropriate control (proper restriction of freedom)	Adaptive attributions	IM stimulation	Task execution	Task/Flow	Actional phase
3	Authenticity	Valence	IM stimulation	Pleasantness	Task/Flow	Actional phase
4	Degree of engagement in tasks	Motivational behaviour	IM stimulation	Pleasantness	Task/Flow	Actional phase
5	Degree of decision-making involvement	Goal salience	Identified regulation	Action control	Task/Flow	Pre-actional phase
6	Appropriate decision-making	Adaptive attributions	IM stimulation	Task execution	Task/Flow	Actional phase
7	Level of decision-making in terms of experience/maturity	Adaptive attributions	Identified regulation	Coping ability	Task/Flow	Pre-actional phase
8	Knowledge of topic	Adaptive attributions	IM knowledge	Coping ability	Task/Flow	Pre-actional phase
9	Intellectually challenging task	Valence	IM stimulation	Pleasantness	Task/Flow	Actional phase
10	The computer medium environment	Self-efficacy	External regulation	Task execution	Task/Flow	Pre-actional phase

Appendix G (Continued)

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
11	The connection with other subject	Self-efficacy	IM knowledge	Novelty	Task/Flow	Pre-actional phase
12	Outcome	Achievement	IM accomplishment	Pleasantness	Performance	Post-actional phase
13	Collaboration	Language attitudes	IM stimulation	Task execution	Task/Flow	Actional phase
14	Tandem exchange with a native speaker	Valence	IM stimulation	Pleasantness	Task/Flow	Actional phase

Appendix H

The interrelations between Jarrell and Freiermuth's (2005) study and L2 motivational theories

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
1	L2 use supportive environment	Valence	IM stimulation	Task execution	Task/Flow	Actional Phase
2	Anonymity	Self-efficacy	IM stimulation	Action control	Task/Flow	Actional Phase
3	Control	Self-efficacy	IM stimulation	Action control	Task/Flow	Actional Phase
4	Relaxation	Self-efficacy	IM stimulation	Action control	Task/Flow	Actional Phase

Appendix I

The interrelations between Chan's (2005) study and L2 motivational theories

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
1	*In a class like this, I prefer course material that really challenges me so I can learn new things	Valence	IM knowledge	Novelty	Task/Flow	Pre-actional phase
2	*In a class like this, I prefer course materials that arouse my curiosity, even if it is difficult to learn	Valence	IM knowledge	Novelty	Task/Flow	Pre-actional phase
3	*The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible	Valence	IM knowledge	Novelty	Task/Flow	Actional phase
4	*when I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade	Valence	IM knowledge	Novelty	Task/Flow	Pre-actional phase
5	*It is important for me to learn the course material in this class	Goal Salience	IM knowledge	Goal significance	Task/Flow	Pre-actional phase
6	*Understanding the subject matter of this course is very important to me	Goal Salience	IM knowledge	Goal significance	Task/Flow	Pre-actional phase
7	*I think I will be able to use what I learned in this course in other courses	Valence	IM knowledge	Novelty	Task/Flow	Pre-actional phase
8	*I think the course material in this class is useful for me to learn	Valence	IM knowledge	Novelty	Task/Flow	Pre-actional phase

Appendix I (Continued)

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
9	I like the subject matter of this course	Valence	IM knowledge	Novelty	Task/Flow	Pre-actional phase
10	*I am very interested in the content area of this course	Valence	IM knowledge	Novelty	Task/Flow	Pre-actional phase
11	*If I study in appropriate ways, then I will be able to learn the material in this course	Self-efficacy	Identified regulation	Coping ability	Task/Flow	Pre-actional phase
12	*If I try hard enough, then I will understand the course materials	Self-efficacy	Identified regulation	Coping ability	Task/Flow	Pre-actional phase
13	*It is my own fault if I don't learn the material I this course	Adaptive attributions	Introjected regulation	Coping ability	Task/Flow	Actional phase
14	*If I don't understand the course material, it is because I didn't try hard enough	Adaptive attributions	Introjected regulation	Coping ability	Task/Flow	Actional phase
15	*I expect to do well in this class	Self-efficacy	IM stimulation	Coping ability	Task/Flow	Actional phase
16	*I'm confident I can understand the basic concepts taught in this course	Achievement	IM accomplishment	Task execution	Performance	Post-actional phase
17	*I'm certain I can master the skills being taught in this class	Achievement	IM accomplishment	Task execution	Performance	Post-actional phase
18	Considering the difficulty of this course and my skills, I think I will do well in this class	Achievement	IM accomplishment	Task execution	Performance	Post-actional phase

Appendix I (Continued)

No.	Item	Socio-Educational Model	Self-determination Theory	Task Motivation	Task/Flow Performance	Process Oriented Model
19	I'm confident I can do an excellent job on the assignments and tests in this course	Achievement	IM accomplishment	Task execution	Performance	Post-actional phase
20	I believe I will receive an excellent grade in this class	Achievement	IM accomplishment	Task execution	Performance	Post-actional phase

* strong factor

Appendix J

Strong factors and macro dynamic mechanisms of L2 motivation

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
6	5	It is important for me to learn the course material in this class	Task/Flow	Pre-actional phase	Goal Salience
6	6	Understanding the subject matter of this course is very important to me	Task/Flow	Pre-actional phase	Goal Salience
2	23	Learning how to use computers is important for my career	Task/Flow	Pre-actional phase	Goal salience
2	14	Using e-mail and the Internet is a good way to learn more about different people and cultures	Task/Flow	Pre-actional phase	Valence
6	1	In a class like this, I prefer course material that really challenges me so I can learn new things	Task/Flow	Pre-actional phase	Valence
6	2	In a class like this, I prefer course materials that arouse my curiosity, even if it is difficult to learn	Task/Flow	Pre-actional phase	Valence
6	4	When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade	Task/Flow	Pre-actional phase	Valence
6	7	I think I will be able to use what I learned in this course in other courses	Task/Flow	Pre-actional phase	Valence

Appendix J (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
6	8	I think the course material in this class is useful for me to learn	Task/Flow	Pre-actional phase	Valence
6	10	I am very interested in the content area of this course	Task/Flow	Pre-actional phase	Valence
2	11	An advantage of e-mail helps me develop my thoughts and ideas	Task/Flow	Pre-actional phase	Self-efficacy
2	12	Writing to others by e-mail helps me develop my thoughts and ideas	Task/Flow	Pre-actional phase	Self-efficacy
2	18	Using a computer gives me more chances to read and use authentic English	Task/Flow	Pre-actional phase	Self-efficacy
2	15	Communicating by e-mail is a good way to improve my English	Task/Flow	Pre-actional phase	Self-efficacy
2	17	Writing by computer makes me more creative	Performance	Pre-actional phase	Self-efficacy
2	27	Using a computer gives me more chances to practice English	Task/Flow	Pre-actional phase	Self-efficacy
2	1	I can write better essays when I do them on computer	Performance	Pre-actional phase	Self-efficacy
2	2	Revising my papers is a lot easier when I write them on computer	Performance	Pre-actional phase	Self-efficacy
2	8	I am less afraid to contact people by e-mail than in person	Task/Flow	Pre-actional phase	Self-efficacy

Appendix J (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
2	20	Using a computer is worth the time and effort	Task/Flow	Pre-actional phase	Self-efficacy
6	11	If I study in appropriate ways, then I will be able to learn the material in this course	Task/Flow	Pre-actional phase	Self-efficacy
6	12	If I try hard enough, then I will understand the course materials	Task/Flow	Pre-actional phase	Self-efficacy
2	13	Using e-mail and the Internet makes me feel part of a community	Task/Flow	Actional phase	Language attitudes
2	10	E-mail helps people learn from each other	Task/Flow	Actional phase	Language attitudes
1	19	Students perceive existence of "rules" for exclusive use of French	Task/Flow	Actional phase	Language attitudes
1	20	Students feel compelled to participate on the network	Task/Flow	Actional phase	Language attitudes
1	21	Students observe that English is almost never used on the network	Task/Flow	Actional phase	Language attitudes
6	3	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible	Task/Flow	Actional phase	Valence
2	22	I enjoy the challenge of using computers	Task/Flow	Actional phase	Valence

Appendix J (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
2	21	Using a computer gives me more control over my learning	Task/Flow	Actional Phase	Self-efficacy
1	9	Students feel less stress than in the classroom	Task/Flow	Actional Phase	Self-efficacy
1	13	Students experience greater ease of communication	Task/Flow	Actional Phase	Self-efficacy
1	14	The network allows for individual learning styles	Task/Flow	Actional Phase	Self-efficacy
6	15	I expect to do well in this class	Task/Flow	Actional Phase	Self-efficacy
1	10	Students have adequate time to think, and compose message	Task/Flow	Actional Phase	Adaptive attributions
2	29	Computers help people overcome weakness and powerlessness	Task/Flow	Actional Phase	Adaptive attributions
1	11	Students feel empowered to control the conversational task	Task/Flow	Actional Phase	Adaptive attributions
6	13	It is my own fault if I don't learn the material I this course	Task/Flow	Actional Phase	Adaptive attributions
6	14	If I don't understand the course material, it is because I didn't try hard enough	Task/Flow	Actional Phase	Adaptive attributions

Appendix J (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
2	6	I enjoy using the computer to communicate with people around the world	Task/Flow	Actional phase	Motivational behaviour
2	7	I enjoy using the computer to communicate with my classmates	Task/Flow	Actional phase	Motivational behaviour
2	9	I enjoy using the computer to communicate with my teacher	Task/Flow	Actional phase	Motivational behaviour
2	19	I want to continue using a computer in my English classes	Task/Flow	Actional phase	Motivational behaviour
1	4	Students appreciate opportunity for writing practice	Task/Flow	Actional phase	Motivational behaviour
1	7	Students enjoy conversational aspect of electronic interaction	Task/Flow	Actional phase	Motivational behaviour
1	12	Everyone always has a fun	Task/Flow	Actional phase	Motivational behaviour
1	15	Students express a positive reaction and claim to enjoy the experience	Task/Flow	Actional phase	Motivational behaviour
1	16	Students get to know classmates better	Performance	Post-actional phase	Achievement
2	4	I enjoy seeing the things I write printed out	Performance	Post-actional phase	Achievement

Appendix J (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
2	16	Learning to use a computer gives me a feeling of accomplishment	Performance	Post-actional phase	Achievement
1	6	Students experience increased output	Performance	Post-actional phase	Achievement
6	16	I'm confident I can understand the basic concepts taught in this course	Performance	Post-actional phase	Achievement
6	17	I'm certain I can master the skills being taught in this class	Performance	Post-actional phase	Achievement

#: Study number 1: Beauvois's study 2: Warschauer's study 3: García & Arias's study
4: Appel & Gilabert's study 5: Jarrell & Freiermuth's study 6: Chang's study

Appendix K

Possible factors and macro dynamic L2 motivation mechanisms

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
4	5	Degree of decision-making involvement	Task/Flow	Pre-actional phase	Goal salience
6	9	I like the subject matter of this course	Task/Flow	Pre-actional phase	Valence
4	11	The connection with other subject	Task/Flow	Pre-actional phase	Self-efficacy
2	24	I can learn English more independently when I use a computer	Task/Flow	Pre-actional phase	Self-efficacy
2	26	I can learn English faster when I use a Computer	Performance	Pre-actional phase	Self-efficacy
2	5	Writing papers by computer saves time compared to by hand	Performance	Pre-actional phase	Self-efficacy
4	10	The computer medium environment	Task/Flow	Pre-actional phase	Self-efficacy
4	8	Knowledge of topic	Task/Flow	Pre-actional phase	Adaptive attributions
4	7	Level of decision-making based on experience/maturity	Task/Flow	Pre-actional phase	Adaptive attributions
2	25	Computers help people overcome isolation	Task/Flow	Actional phase	Language attitudes

Appendix K (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
4	13	Collaboration	Task/Flow	Actional phase	Language attitudes
3	2	Easy access to the reference for extra information (Culture)	Task/Flow	Actional phase	Valence
1	17	Students experience opportunities for "real" conversation on the LAN	Task/Flow	Actional phase	Valence
4	14	Tandem exchange with a native Speaker	Task/Flow	Actional phase	Valence
4	1	Interesting topics	Task/Flow	Actional phase	Valence
4	3	Authenticity	Task/Flow	Actional phase	Valence
4	9	Intellectually challenging task	Task/Flow	Actional phase	Valence
5	1	L2 use supportive environment	Task/Flow	Actional phase	Valence
3	1	Easy access to the references for essential information (Grammar/Vocabulary/Listening)	Task/Flow	Actional phase	Self-efficacy
3	3	Easy continuous practices	Performance	Actional phase	Self-efficacy

Appendix K (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
5	3	Control	Task/Flow	Actional phase	Self-efficacy
1	18	Male students' are perceived as less "Qmacho," more sensitive, more talkative	Task/Flow	Actional phase	Self-efficacy
5	2	Anonymity	Task/Flow	Actional phase	Self-efficacy
5	4	Relaxation	Task/Flow	Actional phase	Self-efficacy
2	28	Computers are not usually frustrating to work with	Task/Flow	Actional phase	Adaptive attributions
4	2	Appropriate control (proper restriction of freedom)	Task/Flow	Actional phase	Adaptive attributions
4	6	Appropriate decision-making	Task/Flow	Actional phase	Adaptive attributions
2	3	I enjoy writing my papers on computer more than by hand	Task/Flow	Actional phase	Motivational behaviour
4	4	Degree of engagement in tasks	Task/Flow	Actional phase	Motivational behaviour
1	1	Students monitor use of grammar to express themselves	Performance	Post-actional phase	Achievement

Appendix K (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model
3	4	Achievement	Performance	Post-actional phase	Achievement
4	12	Outcome	Performance	Post-actional phase	Achievement
1	2	Students experience increased comprehension	Performance	Post-actional phase	Achievement
1	3	Students experience increased reading practice	Performance	Post-actional phase	Achievement
1	5	Students express some transfer of writing skills to speaking	Performance	Post-actional phase	Achievement
1	8	Students give evidence of automaticity	Performance	Post-actional phase	Achievement
6	18	Considering the difficulty of this course and my skills, I think I will do well in this class	Performance	Post-actional phase	Achievement
6	19	I'm confident I can do an excellent job on the assignments and tests in this course	Performance	Post-actional phase	Achievement
6	20	I believe I will receive an excellent grade in this class	Performance	Post-actional phase	

#: Study number 1: Beauvois's study 2: Warschauer's study 3: García & Arias's study
4: Appel & Gilabert's study 5: Jarrell & Freiermuth's study 6: Chang's study

Appendix L

Strong factors and micro mechanisms of L2 motivation

#	No.	Item	Self-determination Theory	Task Motivation
2	14	Using e-mail and the Internet is a good way to learn more about different people and cultures	IM knowledge	Novelty
6	1	In a class like this, I prefer course material that really challenges me so I can learn new things	IM knowledge	Novelty
6	2	In a class like this, I prefer course materials that arouse my curiosity, even if it is difficult to learn	IM knowledge	Novelty
6	4	When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade	IM knowledge	Novelty
6	7	I think I will be able to use what I learned in this course in other courses	IM knowledge	Novelty
6	8	I think the course material in this class is useful for me to learn	IM Knowledge	Novelty
6	10	I am very interested in the content area of this course	IM knowledge	Novelty
2	11	An advantage of e-mail helps me develop my thoughts and ideas	IM knowledge	Novelty
2	12	Writing to others by e-mail helps me develop my thoughts and ideas	IM knowledge	Novelty
2	18	Using a computer gives me more chances to read and use authentic English	IM knowledge	Novelty
6	3	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible	IM knowledge	Novelty
1	16	Students get to know classmates better	IM knowledge	Pleasantness
6	5	It is important for me to learn the course material in this class	IM Knowledge	Goal significance
6	6	Understanding the subject matter of this course is very important to me	IM knowledge	Goal significance
2	5	Communicating by e-mail is a good way to improve my English	IM knowledge	Coping ability
2	27	Using a computer gives me more chances to practice English	IM knowledge	Coping ability

Appendix L (Continued)

#	No.	Item	Self-determination Theory	Task Motivation
2	17	Writing by computer makes me more creative	IM knowledge	Coping ability
2	4	I enjoy seeing the things I write printed out	IM accomplishment	Pleasantness
2	16	Learning to use a computer gives me a feeling of accomplishment	IM accomplishment	Pleasantness
1	6	Students experience increased output	IM accomplishment	Pleasantness
6	16	I'm confident I can understand the basic concepts taught in this course	IM accomplishment	Task execution
6	17	I'm certain I can master the skills being taught in this class	IM accomplishment	Task execution
2	22	I enjoy the challenge of using computers	IM stimulation	Pleasantness
2	6	I enjoy using the computer to communicate with people around the world	IM stimulation	Pleasantness
2	7	I enjoy using the computer to communicate with my classmates	IM stimulation	Pleasantness
2	9	I enjoy using the computer to communicate with my teacher	IM stimulation	Pleasantness
2	19	I want to continue using a computer in my English classes	IM stimulation	Pleasantness
1	4	Students appreciate opportunity for writing practice	IM stimulation	Pleasantness
1	7	Students enjoy conversational aspect of electronic interaction	IM stimulation	Pleasantness
6	6	Understanding the subject matter of this course is very important to me	IM knowledge	Goal significance
2	5	Communicating by e-mail is a good way to improve my English	IM knowledge	Coping ability
2	27	Using a computer gives me more chances to practice English	IM knowledge	Coping ability
2	17	Writing by computer makes me more creative	IM knowledge	Coping ability
2	4	I enjoy seeing the things I write printed out	IM accomplishment	Pleasantness
2	16	Learning to use a computer gives me a feeling of accomplishment	IM accomplishment	Pleasantness
1	6	Students experience increased output	IM accomplishment	Pleasantness

Appendix L (Continued)

#	No.	Item	Self-determination Theory	Task Motivation
6	16	I'm confident I can understand the basic concepts taught in this course	IM accomplishment	Task execution
1	14	The network allows for individual learning styles	IM stimulation	Action control
2	21	Using a computer gives me more control over my learning	IM stimulation	Action control
2	29	Computers help people overcome weakness and powerlessness	IM stimulation	Action control
1	11	Students feel empowered to control the conversational task	IM stimulation	Action control
2	8	I am less afraid to contact people by e-mail than in person	External regulation	Task execution
2	20	Using a computer is worth the time and effort	External regulation	Task execution
2	1	I can write better essays when I do them on computer	External regulation	Task execution
2	2	Revising my papers is a lot easier when I write them on computer	External regulation	Task execution
6	13	It is my own fault if I don't learn the material I this course	Introjected regulation	Coping ability
6	14	If I don't understand the course material, it is because I didn't try hard enough	Introjected regulation	Coping ability
1	19	Students perceive existence of "rules" for exclusive use of French	Introjected regulation	Task execution
1	20	Students feel compelled to participate on the network	Introjected regulation	Task execution
1	21	Students observe that English is almost never used on the network	Introjected regulation	Task execution
2	23	Learning how to use computers is important for my career	Identified regulation	Goal significance
6	11	If I study in appropriate ways, then I will be able to learn the material in this course	Identified regulation	Coping ability
6	12	If I try hard enough, then I will understand the course materials	Identified regulation	Coping ability

#: Study number 1: Beauvois's study 2: Warschauer's study 3: García & Arias's study 4: Appel & Gilabert's study 5: Jarrell & Freiermuth's study 6: Chang's study

Appendix M

Possible factors and micro mechanisms of L2 motivation

#	No.	Item	Self-determination Theory	Task Motivation
6	9	I like the subject matter of this course	IM knowledge	Novelty
4	11	The connection of other subject	IM knowledge	Novelty
3	2	Easy access to the reference for extra information (Culture)	IM knowledge	Novelty
3	1	Easy access to the references for essential information (Grammar/Vocabulary/Listening)	IM knowledge	Novelty
4	8	The knowledge of topic	IM knowledge	Coping ability
1	1	Students monitor use of grammar to express themselves	IM knowledge	Pleasantness
4	12	Outcome	IM accomplishment	Pleasantness
3	4	Achievement	IM accomplishment	Pleasantness
1	2	Students experience increased comprehension	IM accomplishment	Pleasantness
1	3	Students experience increased reading practice	IM accomplishment	Pleasantness
1	5	Students express some transfer of writing skills to speaking	IM accomplishment	Pleasantness
1	8	Students give evidence of automaticity	IM accomplishment	Pleasantness
6	18	Considering the difficulty of this course and my skills, I think I will do well in this class	IM accomplishment	Task execution
6	19	I'm confident I can do an excellent job on the assignments and tests in this course	IM accomplishment	Task execution
6	20	I believe I will receive an excellent grade in this class	IM accomplishment	Task execution
1	17	Students experience opportunities for "real" conversation on the LAN	IM Stimulation	Pleasantness
4	1	Interesting topics	IM stimulation	Pleasantness
4	3	Authenticity	IM stimulation	Pleasantness

Appendix M (Continued)

#	No.	Item	Self-determination Theory	Task Motivation
4	9	Intellectually challenging task	IM stimulation	Pleasantness
4	14	Tandem exchange with a native speaker	IM stimulation	Pleasantness
2	3	I enjoy writing my papers on computer more than by hand	IM stimulation	Pleasantness
4	4	Degree of engagement in tasks	IM stimulation	Pleasantness
4	13	Collaboration	IM stimulation	Task execution
5	1	L2 use supportive environment	IM stimulation	Task execution
3	3	Easy continuous practices	IM Stimulation	Task execution
5	3	Control	IM stimulation	Task execution
2	28	Computers are not usually frustrating to work with	IM stimulation	Task execution
4	2	Appropriate control (proper restriction of freedom)	IM stimulation	Task execution
4	6	Appropriate decision-making	IM stimulation	Task execution
2	25	Computers help people overcome isolation	IM stimulation	Action control
1	18	Male students' are perceived as less "Qmacho," more sensitive, more talkative	IM stimulation	Action control
5	2	Anonymity	IM stimulation	Action control
5	4	Relaxation	IM Stimulation	Action control
2	26	I can learn English faster when I use a computer	External regulation	Coping ability
2	5	Writing papers by computer saves time compared to by hand	External regulation	Task execution
4	10	The computer medium environment	External regulation	Task execution
2	24	I can learn English more independently when I use a computer	External regulation	Action control

Appendix M (Continued)

#	No.	Item	Self-determination Theory	Task Motivation
4	7	Level of decision-making based on experience/maturity	Identified regulation	Coping ability
4	5	Degree of decision-making involvement	Identified regulation	Action control

#: Study number 1: Beauvois's study 2: Warschauer's study 3: García & Arias's study 4: Appel & Gilabert's study 5: Jarrell & Freiermuth's study 6: Chang's study

Appendix N

Strong factors and L2 motivation mechanisms

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
6	5	It is important for me to learn the course material in this class	Task/Flow	Pre-actional phase	Goal Salience	IM knowledge	Goal significance
6	6	Understanding the subject matter of this course is very important to me	Task/Flow	Pre-actional phase	Goal Salience	IM knowledge	Goal significance
2	23	Learning how to use computers is important for my career	Task/Flow	Pre-actional phase	Goal salience	Identified regulation	Goal significance
2	14	Using e-mail and the Internet is a good way to learn more about different people and cultures	Task/Flow	Pre-actional phase	Valence	IM knowledge	Novelty
6	1	In a class like this, I prefer course material that really challenges me so I can learn new things	Task/Flow	Pre-actional phase	Valence	IM knowledge	Novelty
6	2	In a class like this, I prefer course materials that arouse my curiosity, even if it is difficult to learn	Task/Flow	Pre-actional phase	Valence	IM knowledge	Novelty
6	4	When I have the opportunity in this class, I choose course assignments that can learn from even if they don't guarantee a good grade	Task/Flow	Pre-actional phase	Valence	IM Knowledge	Novelty
6	7	I think I will be able to use what I learned in this course in other courses	Task/Flow	Pre-actional phase	Valence	IM knowledge	Novelty

Appendix N (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
6	8	I think the course material in this class is useful for me to learn	Task/Flow	Pre-actional phase	Valence	IM knowledge	Novelty
6	10	I am very interested in the content area of this course	Task/Flow	Pre-actional phase	Valence	IM knowledge	Novelty
2	11	An advantage of e-mail helps me develop my thoughts and ideas	Task/Flow	Pre-actional phase	Self-efficacy	IM knowledge	Novelty
2	12	Writing to others by e-mail helps me develop my thoughts and ideas	Task/Flow	Pre-actional phase	Self-efficacy	IM knowledge	Novelty
2	18	Using a computer gives me more chances to read and use authentic English	Task/Flow	Pre-actional phase	Self-efficacy	IM knowledge	Novelty
2	15	Communicating by e-mail is a good way to improve my English	Task/Flow	Pre-actional phase	Self-efficacy	IM knowledge	Coping ability
2	17	Writing by computer makes me more creative	Performance	Pre-actional phase	Self-efficacy	IM knowledge	Coping ability
2	27	Using a computer gives me more chances to practice English	Task/Flow	Pre-actional phase	Self-efficacy	IM knowledge	Coping ability
2	1	I can write better essays when I do them on computer	Performance	Pre-actional phase	Self-efficacy	External regulation	Task execution
2	2	Revising my papers is a lot easier when I write them on computer	Performance	Pre-actional phase	Self-efficacy	External regulation	Task execution

Appendix N (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
2	8	I am less afraid to contact people by e-mail than in person	Task/Flow	Pre-actional phase	Self-efficacy	External regulation	Task execution
2	20	Using a computer is worth the time and effort	Task/Flow	Pre-actional phase	Self-efficacy	External regulation	Task execution
6	11	If I study in appropriate ways, then I will be able to learn the material in this course	Task/Flow	Pre-actional phase	Self-efficacy	Identified regulation	Coping ability
6	12	If I try hard enough, then I will understand the course materials	Task/Flow	Pre-actional phase	Self-efficacy	Identified regulation	Coping ability
2	13	Using e-mail and the Internet makes me feel part of a community	Task/Flow	Actional phase	Language attitudes	IM stimulation	Compatibility with self and social image
2	10	E-mail helps people learn from each other	Task/Flow	Actional phase	Language attitudes	IM stimulation	Task execution
1	19	Students perceive existence of "rules" for exclusive use of French	Task/Flow	Actional phase	Language attitudes	Introjected regulation	Task execution
1	20	Students feel compelled to participate on the network	Task/Flow	Actional phase	Language attitudes	Introjected regulation	Task execution
1	21	Students observe that English is almost never used on the network	Task/Flow	Actional phase	Language attitudes	Introjected regulation	Task execution

Appendix N (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
6	3	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible	Task/Flow	Actional phase	Valence	IM knowledge	Novelty
2	22	I enjoy the challenge of using computers	Task/Flow	Actional phase	Valence	IM stimulation	Pleasantness
2	21	Using a computer gives me more control over my learning	Task/Flow	Actional phase	Self-efficacy	IM stimulation	Task execution
1	9	Students feel less stress than in the classroom	Task/Flow	Actional phase	Self-efficacy	IM stimulation	Action control
1	13	Students experience greater ease of Communication	Task/Flow	Actional phase	Self-efficacy	IM stimulation	Action control
1	14	The network allows for individual learning styles	Task/Flow	Actional phase	Self-efficacy	IM stimulation	Action control
6	15	I expect to do well in this class	Task/Flow	Actional phase	Self-efficacy	IM stimulation	Coping ability
1	10	Students have adequate time to think, and compose message	Task/Flow	Actional phase	Adaptive attributions	IM stimulation	Task execution
2	29	Computers help people overcome weakness and powerlessness	Task/Flow	Actional phase	Adaptive attributions	IM stimulation	Action control
1	11	Students feel empowered to control the conversational task	Task/Flow	Actional phase	Adaptive attributions	IM Stimulation	Action control

Appendix N (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
6	13	It is my own fault if I don't learn the material I this course	Task/Flow	Actional phase	Adaptive attributions	Introjected regulation	Coping ability
6	14	If I don't understand the course material, it is because I didn't try hard enough	Task/Flow	Actional phase	Adaptive attributions	Introjected regulation	Coping ability
2	6	I enjoy using the computer to communicate with people around the world	Task/Flow	Actional phase	Motivational behaviour	IM stimulation	Pleasantness
2	7	I enjoy using the computer to communicate with my classmates	Task/Flow	Actional phase	Motivational behaviour	IM Stimulation	Pleasantness
2	9	I enjoy using the computer to communicate with my teacher	Task/Flow	Actional phase	Motivational behaviour	IM stimulation	Pleasantness
2	19	I want to continue using a computer in my English classes	Task/Flow	Actional phase	Motivational behaviour	IM stimulation	Pleasantness
1	4	Students appreciate opportunity for writing practice	Task/Flow	Actional phase	Motivational behaviour	IM stimulation	Pleasantness
1	7	Students enjoy conversational aspect of electronic interaction	Task/Flow	Actional phase	Motivational behaviour	IM stimulation	Pleasantness
1	12	Everyone always has a fun	Task/Flow	Actional phase	Motivational behaviour	IM Stimulation	Pleasantness

Appendix N (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
1	15	Students express a positive reaction and claim to enjoy the experience	Task/Flow	Actional phase	Motivational behaviour	IM stimulation	Pleasantness
1	16	Students get to know classmates better	Performance	Post-actional phase	Achievement	IM knowledge	Pleasantness
2	4	I enjoy seeing the things I write printed out	Performance	Post-actional phase	Achievement	IM accomplishment	Pleasantness
2	16	Learning to use a computer gives me a feeling of accomplishment	Performance	Post-actional phase	Achievement	IM accomplishment	Pleasantness
1	6	Students experience increased output	Performance	Post-actional phase	Achievement	IM accomplishment	Pleasantness
6	16	I'm confident I can understand the basic concepts taught in this course	Performance	Post-actional phase	Achievement	IM accomplishment	Task execution
6	17	I'm certain I can master the skills being taught in this class	Performance	Post-actional phase	Achievement	IM accomplishment	Task execution

#: Study number 1: Beauvois's study 2: Warschauer's study 3: García & Arias's study 4: Appel & Gilabert's study
5: Jarrell & Freiermuth's study 6: Chang's study

Appendix O

Possible factors and L2 motivation mechanisms

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
4	5	Degree of decision-making involvement	Task/Flow	Pre-actional phase	Goal salience	Identified regulation	Action control
6	9	I like the subject matter of this course	Task/Flow	Pre-actional phase	Valence	IM knowledge	Novelty
4	11	The connection with other subject	Task/Flow	Pre-actional phase	Self-efficacy	IM knowledge	Novelty
2	24	I can learn English more independently when I use a computer	Task/Flow	Pre-actional phase	Self-efficacy	External regulation	Action control
2	26	I can learn English faster when I use a computer	Performance	Pre-actional phase	Self-efficacy	External regulation	Coping ability
2	5	Writing papers by computer saves time compared to by hand	Performance	Pre-actional phase	Self-efficacy	External regulation	Task execution
4	10	The computer medium environment	Task/Flow	Pre-actional phase	Self-efficacy	External regulation	Task execution
4	8	Knowledge of topic	Task/Flow	Pre-actional phase	Adaptive attributions	IM knowledge	Coping ability
4	7	Level of decision-making based on experience/maturity	Task/Flow	Pre-actional phase	Adaptive attributions	Identified regulation	Coping ability
2	25	Computers help people overcome Isolation	Task/Flow	Actional phase	Language attitudes	IM stimulation	Action control

Appendix O (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
4	13	Collaboration	Task/Flow	Actional phase	Language attitudes	IM stimulation	Task execution
3	2	Easy access to the reference for extra information (Culture)	Task/Flow	Actional phase	Valence	IM knowledge	Novelty
1	17	Students experience opportunities for "real" conversation on the LAN	Task/Flow	Actional phase	Valence	IM stimulation	Pleasantness
4	14	Tandem exchange with a native Speaker	Task/Flow	Actional phase	Valence	IM stimulation	Pleasantness
4	1	Interesting Topic	Task/Flow	Actional phase	Valence	IM stimulation	Pleasantness
4	3	Authenticity	Task/Flow	Actional phase	Valence	IM stimulation	Pleasantness
4	9	Intellectually challenging task	Task/Flow	Actional phase	Valence	IM stimulation	Pleasantness
5	1	L2 use supportive environment	Task/Flow	Actional phase	Valence	IM stimulation	Task execution
3	1	Easy access to the references for essential information (Grammar/Vocabulary/Listening)	Task/Flow	Actional phase	Self-efficacy	IM Knowledge	Novelty
3	3	Easy continuous practices	Performance	Actional phase	Self-efficacy	IM stimulation	Task execution

Appendix O (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
5	3	Control	Task/Flow	Actional Phase	Self-efficacy	IM stimulation	Task execution
1	18	Male students' are perceived as less "Qmacho," more sensitive, more talkative	Task/Flow	Actional Phase	Self-efficacy	IM stimulation	Action control
5	2	Anonymity	Task/Flow	Actional Phase	Self-efficacy	IM stimulation	Action control
5	4	Relaxation	Task/Flow	Actional Phase	Self-efficacy	IM Stimulation	Action control
2	28	Computers are not usually frustrating to work with	Task/Flow	Actional Phase	Adaptive attributions	IM stimulation	Task execution
4	2	Appropriate control (proper restriction of freedom)	Task/Flow	Actional Phase	Adaptive attributions	IM stimulation	Task execution
4	6	Appropriate decision-making	Task/Flow	Actional Phase	Adaptive attributions	IM stimulation	Task execution
2	3	I enjoy writing my papers on computer more than by hand	Task/Flow	Actional Phase	Motivational behaviour	IM stimulation	Pleasantness
4	4	Degree of engagement in tasks	Task/Flow	Actional Phase	Motivational behaviour	IM Stimulation	Pleasantness
1	1	Students monitor use of grammar to express themselves	Performance	Post-actional Phase	Achievement	IM knowledge	Pleasantness

Appendix O (Continued)

#	No.	Item	Task/Flow Performance	Process Oriented Model	Socio-Educational Model	Self-determination Theory	Task Motivation
3	4	Achievement	Performance	Post-actional phase	Achievement	IM accomplishment	Pleasantness
4	12	Outcome	Performance	Post-actional phase	Achievement	IM accomplishment	Pleasantness
1	2	Students experience increased comprehension	Performance	Post-actional phase	Achievement	IM accomplishment	Pleasantness
1	3	Students experience increased reading Practice	Performance	Post-actional phase	Achievement	IM accomplishment	Pleasantness
1	5	Students express some transfer of writing skills to speaking	Performance	Post-actional phase	Achievement	IM accomplishment	Pleasantness
1	8	Students give evidence of automaticity	Performance	Post-actional phase	Achievement	IM accomplishment	Pleasantness
6	18	Considering the difficulty of this course and my skills, I think I will do well in this class	Performance	Post-actional phase	Achievement	IM accomplishment	Task execution
6	19	I'm confident I can do an excellent job on the assignments and tests in this course	Performance	Post-actional phase	Achievement	IM accomplishment	Task execution
6	20	I believe I will receive an excellent grade in this class	Performance	Post-actional phase	Achievement	IM accomplishment	Task execution

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