Stimulating intercultural intellectual capabilities in intercultural communication: testing an innovative course design

Antonenko, T.A.

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CHAPTER 5

EFFECTS OF A DESIGNED COURSE ON IIC

"When we see men of a contrary character, we should turn inwards and examine ourselves"
-- *K'ung Fu Tzu, Chinese philosopher & reformer*

Abstract

The requirement to act competently interculturally has gained substantial importance in our globalising world. Therefore, Intercultural Communicative Competence (ICC) is taught at many universities. In this chapter we test a theoretical model for courses in – what we have called – IIC that is based on the combination of a model that focuses on growth of intercultural intellectual capabilities (IIC) and learning during and from a dialogue.

As explained in chapter 2, the model on developing IIC suggests that cognitive experiences that cause a certain disequilibrium in the individual student's current understanding of the world, create opportunities for learning – i.e. create the potential for intrapersonal growth. From these learning opportunities, both through intrapersonal and interpersonal experiences, the student may construct (more) interculturally oriented frames of reference at the cognitive, meta-cognitive and intentional dimensions of the model, which together feed into a person's intellectual capabilities. These intercultural capabilities "under construction" may allow the student to be more adapted to approach and process intercultural experiences. Next to intrapersonal growth, the student can also learn from interpersonal experiences that follow from learning in a dialogue, and that stimulate the intrapersonal dimension further, thus leading to increases in IIC. We 'translated' this model into course guidelines, by looking at: intrapersonal growth (through critical cultural awareness, cultural stress tolerance and willingness to experiment with the cultural self, dialogue with the self), and interpersonal growth (through critical cultural awareness and dialogue with others).

The theory was tested in an experiment with switching panels for its effect on the two dimensions of IIC: intra-IIC and inter-IIC, and on critical thinking and self-reflection as intellectual drivers. The new course was taught two times over a period of four weeks each at Tomsk State University in Russia. 98 Students participated. No initial differences between conditions were observed for the relevant variables. No differences were found in the levels of student participation in both runs of the course, indicating that both runs were identical in

this respect. The results of the experiment indicate significant and very large positive effects of the course on both dimensions of IIC as well as on critical thinking and self-reflection. The degree to which inter-IIC is influenced is much higher than intra-IIC. Moreover, we found prolonged effects for the inter-IIC dimension but not for the intra-IIC dimension. Looking at potential interaction effects, our main find was that there was an interaction effect between the level of intrinsic motivation and level of growth of intra-IIC, which suggests that students that were more motivated – or got more motivated during the course – would go more deeply through the cognitive, meta-cognitive, intentional and intellectual capabilities dimensions leading to higher levels of intra-IIC.

Key words: intercultural communication, intercultural intellectual capabilities, intercultural communicative competence, critical thinking, self-reflection

1. INTRODUCTION

Promoting Intercultural Communicative Competence (ICC) – or – if we focus on the intellectual and intrapersonal development angle of ICC, Intercultural Intellectual Capabilities (IIC) – in education has become increasingly important in a world that is opening up (Byram, 1997:15; Lustig and Koester, 1996; Sercu, 2000). Educators have also recognised this fact, aiming to prepare their students for living and interacting in a new world.

In Russia intercultural language education was introduced in the nineties (Safonova, 1991; 1992; 1996) after the fall of Communism in 1989, and was then called 'the socio-cultural approach to language learning' (Safonova, 1991: 3). Many foreign language curricula were redesigned to fit the communicative language teaching framework. Tomsk State University (TSU), the university where we have carried out the experiment, has included courses on Intercultural Communication (IC) in its curricula for almost 9 years. They have been taught since 2000 as compulsory courses in the second and last (fifth) years. Both courses aim to enlarge students' understanding of theories of intercultural communication, study different approaches to IC, both in international and Russian theoretical research. The common teaching format is through lectures and self-study. The credit requirements include knowledge of IC theories and approaches to the study of IC[38].

During the last years, more research has gone into the link between teaching and the intercultural requirements of a globalising world, measuring the effectiveness of course designs in general (Yore, Bisanz and Hand, 2003), and on the development of ICC in particular (Sercu, 2002; Byram, 1997; 2002). This chapter focuses on measuring the effects of a new course in IC that includes the latest insights into the effects of intellectual growth on participants' levels of IIC. In addition to previous research that focused on development of ICC through learning in dialogue with others (Sysoev, 2001; Kramsch, 2006; Ter-Minasova, 2000) or also with the self (Byram 1997; Sercu, 2002), our multi-facetted model of intercultural intellectual capability development, looks at the hitherto 'black box' of what happens inside the mind of the student that engages in different types of dialogue. This intrapersonal process is combined with learning in a dialogue, A course in IC that is based on this multi-facetted model expects students to grow intrapersonally and interpersonally. Going through an internal process of self-reflection and critical thinking, combined with experiences that stem from interpersonal encounters, students become more critically aware of differences in cultures, build up tolerance to cultural stress and may become more open to experimenting with the cultural self, challenging themselves and reflecting themselves against others and society around them.

[38] *Based on the latest version of the Working course programme of June 5, 2005 of Faculty of Foreign Languages, Tomsk State University.*

1.1 Theoretical framework

In instructional models used to teach IC in the past, the main focus was placed on content-based learning characterised by "one-way communication in which the teacher was king", "compliance by the learner", "centralised control by the teacher" and "standardisation in what constitutes knowledge". Indeed, in the past, learners were mostly seen as individual outsiders to a foreign culture developing an interest in understanding it. This is no longer the case today.

The theoretical model for growth of IIC, from which general learning goals (course aims), course design parameters (CDP), course content, and assessment formats can be derived, is explained in detail in chapter 2 and is graphically represented in Figure 5.1.

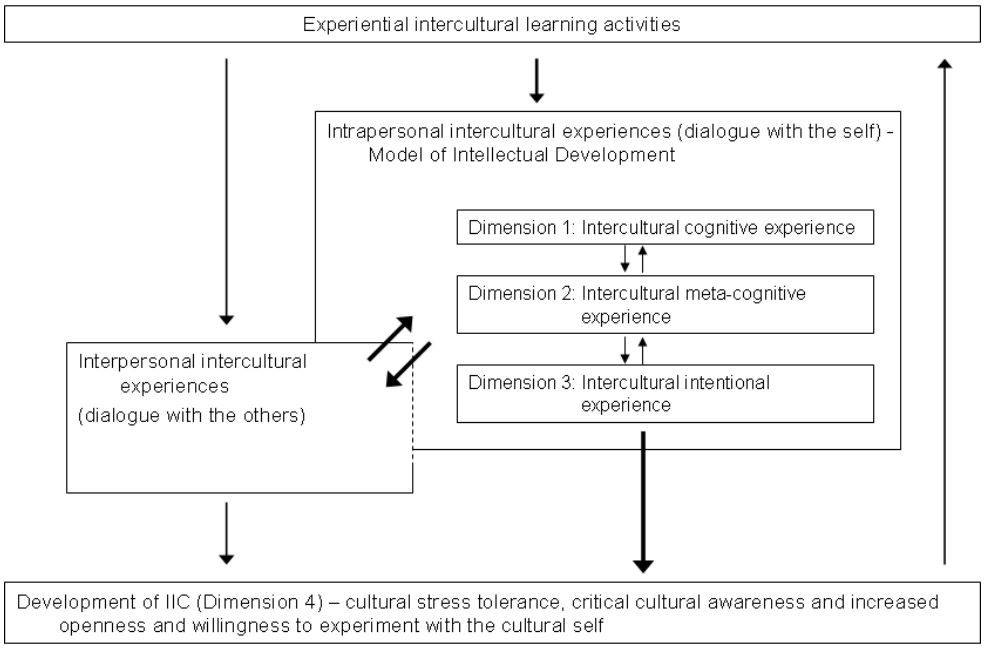

Figure 5.1. Theoretical model for IIC development.

Our theoretical model is embedded in and starts from the model for intellectual development of Kholodnaya (2002), adapted to focus on stimulating intercultural intellectual capabilities. As explained above, Kholodnaya (2002) distinguishes between cognitive, meta-cognitive, intentional and intellectual capabilities. These lead to intra-IIC growth, in combination with inter-IIC growth through a dialogue with the self as well as with others.

Experiential intercultural activities form the basis of our model of stimulating IIC. These activities provide students with the opportunities to stimulate their IIC

that consist of critical cultural awareness, cultural stress tolerance and experimentation with the cultural self in an intercultural context. These are the three main components of IIC that students need to develop to become interculturally competent.

Learning from experiences is important for interculture to grow inside a student, because these experiential intercultural learning activities can create disequilibria inside students – either directly inside the self from participating in those activities or indirectly through dialogue with others. In fact, the interpersonal dimension consists of participating in a dialogue and thus gaining experiences (i.e. being involved in a dialogue) and in participating in a dialogue about experiences (i.e. reflecting on experiences). The disequilibria experienced may start a process of learning that may stimulate critical cultural awareness, cultural stress tolerance and/or willingness to experiment with the cultural self. Experiential learning, as the starting point for stimulating IIC, is in line with developments in modern instructional design theory and insights from experiential psychology, where intercultural language learning is viewed as two-way communication in the process of community building, and learning through participation and networking (Sercu, 2009: 15; Sfard, 1998; Kholodnaya, 2002).

The starting point of intrapersonal growth is 'dimension 1' in Kholodnaya's model where cognitive experiences are related to interculture, which help to create new information coding ways and new semantic structures and schemes. These schemes are considered as generalised and stereotyped forms of storing the existing experiences, knowledge (Byram, 1997) and schemata in a certain subject area.[39] Meta-cognitive experiences ('dimension 2') related to interculture help to stimulate emotional and intellectual control vis-à-vis new knowledge concerning interculture and understanding of interculture at the meta-cognitive level. Intentional experiences ('dimension 3') help to foster and further new views and preferences and new frames of mind as far as intentional experiencing of interculture is concerned. Intercultural intellectual capabilities (dimension 4) include convergent and divergent capabilities, learning ability, and knowledge perception styles. Convergent capabilities are aimed at operationalizing the interculture, developing a critical approach to different cultures and their analysis, while divergent capabilities allow for processing interculture as new, original experiences, contributing to the mechanism of developing skills necessary in dealing with interculture, allowing students to experiment with their cultural selves. Knowledge perception styles complement the convergent and divergent capabilities and guide the ways in which students acquire, process and reflect on new experiences and knowledge, both within and outside the context in which they learn. This also includes encouraging tolerance for unrealistic experiences, i.e. experimentation with the cultural self, allowing the learner to see and respect other cultures more clearly, broadening their views.

In participatory – dialogic – learning, the learner is seen as a participant in intercultural communities, learning through interacting with other members, undergoing

[39] *Situation-oriented learning assists in transforming a socially mediated activity into a mental activity (Galperin, 1969; Vygotsky, 1983). And is facilitated by the provision of real-life experience and bridges the gap between classroom learning and real-life experiences by enabling students to learn in a simulated situation similar to the real situation.*

new experiences and finding assistance in a teacher-coach who helps to clarify learning and stimulates the practice of learning to achieve the attainment target set (Sercu, 2009). The instructor can coach students, teaching them to think along with the topics, encouraging them to form their own opinions and views concerning the subject matter, and relating it to established convictions, opinions, ideas. Even if this learning takes place through dialogue with others, the learning is situated at the individual level: it is the individual student who is supposed to learn through dialogue.

Participating in a cooperative learning dialogue creates both interpersonal and intrapersonal learning experiences. Intra- and interpersonal experiences are linked in two ways. First of all, interpersonal behaviour and experiences can be seen as the manifestation of intrapersonal intercultural development, because a student that has become more interculturally competent, will also show this in dialogue with the others. Secondly, interpersonal experiences contribute to intrapersonal learning, for it is also from the dialogue that learning experiences – and thus disequilibria that cause cognitive development – originate. This is why we have decided to measure IIC in two dimensions: the intrapersonal and interpersonal dimensions, which we term intra-IIC and inter-IIC.

Through the dialogue with the self and dialogue with the others, triggered by experiential intercultural learning activities, different characteristics of the intercultural student are stimulated; i.e. critical cultural awareness is raised in experiences metacognitively when a cultural filter needs to be applied, the levels of cultural stress tolerance are tested by staying open and consciously trying to control unease stemming from intercultural encounters, and – both during and following the encounter – the student can experiment with and test the cultural self following the development of divergent capabilities. Willingness to experiment with the cultural self also follows from knowledge perception styles in that they cover the way in which students engage and go through new intercultural experiences.

Once a student has gone through the full process of intellectual growth, new shared meanings have been created, the disequilibria are addressed or get tolerated more, and new intercultural frames of mind may have unfolded inside, as well as new semantic structures, new schemata, new ways of thinking, new epistemological styles and new ways of coding information. In other words: the student has grown to a higher level of IIC.

For a course designer, the goal is to construct an interesting and challenging course for students to develop IIC. The designer must make choices about the content of the course, and how to stimulate students to develop intra-IIC as well as inter-IIC. There are different types of course design parameters (CDP) that can help shape a course in IC based on the idea of stimulating IIC, by covering the three components of ICC; i.e. the three course aims. The course has to create activities to develop critical cultural awareness, put students at unease to develop their cultural stress tolerance and arrange methods to increase their willingness and openness to experiment with the cultural self. The course also has to stimulate both intrapersonal thinking and development (dialogue with the self) and aims to create interpersonal experiences between students (dialogue with others).

Practicing with the course aims leads to development of the two dimensions of IIC: intra-IIC and inter-IIC. Intra-ICC refers to a person's cultural adaptability, tol-

erance to stress, flexibility and confronts personal values with intercultural situations and problems. Intrapersonal development is mainly about communication with the self, and developing through critical thinking and self-reflection (see chapter 2). Inter-IIC, on the other hand, is focused on the ability of analyzing and solving problems in specific practical situations and is directed towards maintaining communication with others with unknown cultural backgrounds.

For a group of Russian students from TSU, we have examined whether this instructional strategy based on Kholodnaya (2002) and on dialogic learning contributes to an effective learning environment, i.e. leads to significant growth of the two dimensions of IIC. The learning tasks are characteristics that may help students to engage in 'intercultural experiences' (Palomba, 2006) and become 'intercultural speakers' (Byram, Nichols, and Stevens, 2001: 5), determined to understand other cultures, get inside views on them, and to understand their own culture from the point of view of representatives of other cultures.

1.2 Aims and hypotheses

In this study we measure the effects of a self-designed IC course on stimulating Intercultural Intellectual Capabilities (IIC). Through intra- and interpersonal experiences and learning, encouraging students to dialogue with themselves and each other in order to generate disequilibrating experiences, rooted in experiential psychology (Kholodnaya, 2002), we foster intra- and interpersonal intellectual growth. The following hypotheses guided this research:

(1) The IC course significantly and positively affects participants' intra-IIC.

(2) The IC course significantly and positively affects participants' inter-IIC.

Intrapersonal growth of IIC – supported by interpersonal experiences – is expected to be triggered by experiences that create disequilibria inside the students. Because the course on IC provides ample tools, exercises and interactions in a simulated setting to create disequilibria, we expect the course to set the intellectual development process going. Combined with learning in a dialogue, we believe that both intra- and interpersonal levels of IIC should be affected positively and significantly by the course on IC.

(3) Inter-IIC development is affected more strongly than intra-IIC development.

Intrapersonal development and interpersonal experiences are nested in that the interpersonal dialogue is a manifestation of intrapersonal development and interpersonal experiences feed into disequilibria for intrapersonal development. Inter-IIC is a manifestation and more directed towards practical skills in intercultural encounters that can have a repetitive character, while the intra-IIC dimension is about intrapersonal growth, including changing personal beliefs and values following a process of

critically adjusting to disequilibria caused by new intercultural experiences and information. Because stimulating the intra-IIC dimension is a much deeper and profound personal process than stimulating inter-IIC, we expect that inter-IIC will be affected to a larger extent by a 1-month course than intra-IIC.

(4) There is a significant prolonged effect of the designed 1-month IC course on the inter-IIC dimension, but not on the intra-IIC dimension.

Because the inter-IIC dimension is much more focused on practical skills in intercultural encounters, being the manifestation of intrapersonal growth, the interpersonal dimension of IIC is more open to automated reactions of students as they learn how to react to certain intercultural situations. We expect this dimension of IIC to develop further, even after the course has finished, because understanding of new but similar intercultural experiences will require similar attitudes to solve them, convergent ways of thinking, given a certain level of intrapersonal development. Also, students will – after the course – perceive more specific information in interaction with others which is new input for learning. However, more fundamental changes in personal values and beliefs as in the intrapersonal dimension of IIC are not expected to develop further after the 1-month course, because after the course disequilibria – caused purposefully and in a focused manner during the course – will not be generated so frequently anymore.

(5) The IC course significantly affects participants' levels of critical thinking and self-reflection regarding interculture.

With a strong focus on the intra-IIC dimension, we expect the new course in IC to have a significant impact through and therefore also on critical thinking about cultures and self-reflection, two complex cognitive processes that underlie intrapersonal growth through cultural stress tolerance and willingness to experiment with the cultural self in the fourth dimension of our model of IIC.

2. METHOD

2.1 Participants

As mentioned in chapter 4, in detail, a total of 98 university students (91% female) of different ages (from 17 up to 25 years old) from the Faculty of Foreign Languages at Tomsk State University (TSU), Russia, participated in the course. The level of English proficiency varied between intermediate and pre-advanced. Related to the Common European Framework of Reference for Languages (2004), it varied between B1 and C1.[40] Somewhat less than half the students (46) had international experiences and the rest (52 students) did not. All participants followed the introductory course on IC in their second year and 13 of them the fifth year course on IC.

[40] *C1 level – 31,6% of students; B2 level – 26,5% of students; B1/B2 – 41,8% of students, based on their academic records in all English courses combined.*

There are essential differences between these two courses and the newly designed course. The ongoing TSU courses focus mainly on familiarising students with theories concerning IC, are taught one-directionally, with low levels of interaction and no group-work, and do not focus on practical use and applicability. The new course is directed towards the development of two dimensions of IIC and is taught in a student-centred bi-directional way. That means it is focused on stimulating intrapersonal characteristics and creating interpersonal learning experiences through learning in a dialogue with the self and with others, with a strong focus on practical use and applicability of what is learnt in real life situations.

Students were recruited on a voluntary basis to participate in the course organised by the University of Amsterdam and were given a Certificate of Participation at the end of the course.[41] The main selection principle to include students in the study was sufficient knowledge of English that would enable them to understand the materials dealt with and participate in discussions concerning these materials in the classroom. This way they could participate and benefit from the numerous (group and plenary) discussions envisaged, express their thoughts and understand others.[42]

2.2 Development and design of the course

Course development

To relate course development to the two dimensions of IIC is not common in university courses on IC. Therefore, it was not possible to base the course directly on a single published textbook or an existing set of materials for designing the intellectual approach in a dialogue needed (chapter 2). In designing the course we benefited from various important sources of information on content and design. First, we drew on previous experiences in IC teaching and literature available on course design, on IIC, and learning in a dialogue (Reigeluth and Carr-Chellman, 2009; Fowler and Mumford, 1999; Renshaw, 2004; Matsumoto et al., 2001, 2005; Gudykunst and Kim, 1984; Gudykunst et al., 1991; Byram, 1997; Byram et al., 2002 and others). Second, we investigated the availability of parts of teaching materials on IC and IIC (Martin and Nakayama, 2003; Seelye, 1996; Huijser, 2006; Wiertzema and Jansen, 2006; Peterson, 2004; Storti, 1999; Huber-Kriegler et al., 2003; and others). Third, we carried out a trial of measurement instruments in 2008 at TSU to assess the reliability of measurement instruments, the way they affected student perceptions and the ways in which they would need to be adapted to meet the specific research requirements (chapter 3). Fourth, the validity of instruments was tested in terms of discriminant validity. Fifth, a design experiment (one unit of a course) was trialed in 2008 (where the adapted measurement instruments were also re-tested), focusing on the types of learning activities to be included to stimulate IIC through intra- and interpersonal growth processes, facilitated by learning in a dialogue (chapter 4). The

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[41] *No credits were granted to the students by Tomsk State University for participating in the new course because it is not a part of the curriculum approved by the Ministry of Education of the Russian Federation.*

[42] *The course was taught in English and not in Russian because the students are specializing in English as part of their Foreign Language programme they are following at TSU.*

course design and testing process has taken two years, from developing the theoretical framework on IIC and learning in a dialogue to the creation of course design parameters and measurement instruments, and from developing the materials, test running of one module and trial running of the full course.

Measurements

To measure the effects of the course, we have selected, piloted and revised four instruments on the basis of data gained from a pilot study: the ICAPS-46 instrument to measure intra-IIC growth, the INCA instrument to measure inter-IIC growth, the MSLQ-CT instrument to measure changes in critical thinking, and the Self-reflection instrument to measure growth in self-reflective skills. The results of selection, piloting and revisions are presented in chapter 3. The Intercultural Competence Assessment (INCA) instrument was developed within the framework of the Leonardo da Vinci project (2007)[43] and the Intercultural Adaptation Potential Scale (ICAPS-46) instrument by Matsumoto et al. (2001). Both instruments were adapted (for more information on the changes, see chapter 3) to measure the two dimensions of IIC. Both instruments represent the three IIC components we identified. ICAPS-46 instrument aims to tap into a person's cultural adaptability, flexibility and personal values of intrapersonal learning, while the INCA instrument leans more towards interpersonal learning, being a more 'external' measure of IIC as a manifestation of intrapersonal developments.

Critical thinking, a cognitive process that acts as a driver for intra-personal growth in the fourth dimension of our model of IIC as explained in chapter 2, is indicated by one of the components from the MSLQ instrument, adapted to add two more items. See chapter 3 for the details. Extended from part of the MSLQ instrument, we have constructed thirteen items on self-refection consisting of seven items adapted from the MSLQ scale on self-regulation and six additional items. See chapter 3 for the details. The correlation between self-reflection and critical thinking varied from .66, .71 to .81 which implies that these measurements share variance but still measure distinct concepts.

Time-on-task measurements

As mentioned in chapter 4, time-on-task measurements were implemented to look at how much of the allotted time was really spent on learning tasks, and at how time was spent by the students during the class, including listening to the instructions of the teacher and the different activities carried out in class. The measurements indicated that participation was satisfactory, that the CDP were covered to a large degree as intended, and that, in this particular research design, the course implementations in two runs of the experiment were similar.

[43] *Available at: http://www.incaproject.com.*

Research design

We implemented a pre-test post-test design with switching replications to test the five research hypotheses.[44] Because the research design was a double experimental design, the effect of the course was tested twice and we were able to test the durability of the effect for the first experiment (Shadish, Cook and Campbell, 2002: 146) (see Table 5.1). The effect of the course was tested on four variables (1) intra-IIC, measured by the intercultural adaptation potential scale (ICAPS-46); (2) inter-IIC, focusing on acquiring situation-oriented and problem-solving skills, measured by the Intercultural Competence Assessment instrument (INCA); (3) critical thinking, adapted from the MSLQ-CT instrument; and (4) self-reflection, partially adapted from the MSLQ-SR instrument and in part constructed for the purpose of this research, each measured at three occasions (see Table 5.1). For condition 1, the third measurement moment provided information about a possible delayed effect.

The participants were randomly assigned to two conditions except for the fact that 20 more participants were assigned to condition 1 than condition 2 because of course schedule limitations at TSU. Female/male ratios appeared not to differ across conditions. Within conditions, participants were randomly assigned to one out of three groups so that each group had about 16 students. Table 5.1 summarises the design.

Table 5.1. Research design

	Pre-test	*Experiment 1 / Phase 1*		*Experiment 2 / Phase 2*	
Condition 1 (groups 1-3)	O_1	X_1	O_2		O_3
Condition 2 (groups 4-6)	O_1		O_2	X_2	O_3

Note: X = treatment / course, in which $X_1 = X_2$, which implies that the courses taught for conditions 1 and 2 were identical; O = Occasion of measurement (1-2-3)

All students were required to participate in the complete set of pre-test sessions where all instruments were taken (O_1 in Table 5.1). After the pre-test session, the first three subgroups (constituting condition 1) participated in the course (X_1 in Table 5.1), while the other three groups (constituting condition 2) did not. After the first course (that took about four weeks) all students from both conditions were tested via the same instruments as during the pre-test (O_2 in Table 5.1). Then, the conditions were swapped: the experimental condition was not taught after the instrumental tests (control condition in experiment 2), while the control condition from experiment 1 became the experimental condition in experiment 2 and were

[44] *Due to the design specifications, the prolonged effect was only measured for condition 1 since condition 2 served as the control group.*

taught the identical course (X_2 in Table 5.1). Finally, all students participated in a third test session where the instruments were taken (O_3 in Table 5.1).

The course was taught by the author, who has teaching qualifications and 9 years of teaching experience. Three research assistants – all lecturers in English with teaching experiences ranging from 2 to 15 years – assisted in the data collection and in time-on-task observations of the students (see Section 2.3).

Testing procedures

The students were tested at pre-defined intervals in line with the research design. The first testing session took place two days before the first run of the new course started. The second testing (post-test for the students from experiment 1) took place one day after the first condition had finished taking the course. The third testing session (post-test for the students from experiment 2) took place one day after also students from condition 2 had finalised the course. All tests were combined into one set and each testing session took about 1 – 1½ hours, normal for Russian standards. The teacher and assistants monitored levels of concentration and looked for signs of distraction and fatigue among the test takers, but no evidence was found, though some test takers were – on average – much faster than others in completing the tests. For the second and third testing sessions the tests as well as the individual testing items were shuffled to avoid recognition of the questions and order by the test takers and improve validity of the testing by avoiding the students being able to memorise the series of questions.

3. RESULTS

3.1 Testing initial differences between conditions

Table 5.2 presents the means and standard deviations of all the measures in the pre-test.

Table 5.2. Means, standard deviations (between brackets) and ranges of pre-test measures for the two conditions

Variable	*Condition 1 (N=59)*	*Condition 2 (N=39)*
Intra-IIC (ICAPS-46 1-7 scale)	4.92 (.64) 2.41 - 6.00	5.07 (.41) 4.33 - 6.09
Inter-IIC (INCA 1-5 scale)	2.31 (.31) 1.59 - 3.05	2.21 (.30) 1.50 - 2.73
Critical thinking (MSLQ-CT 1-7 scale)	5.75 (.74) 3.13 - 6.63	5.53 (.85) 4.00 - 7.00
Self reflection (1-7 scale)	5.73 (.75) 3.92 - 7.00	5.53 (.89) 4.00 - .00

It is important to check that at the outset of the experiment the two conditions are not statistically different from each other. Multivariate analysis shows no difference

between conditions, Pillai's trace = .07, $F(5,83) = 1.18$, $p = .32$, $\eta^2 = .07$.[45] Subsequent univariate analyses of variance did not reveal any statistically significant differences between the two conditions with respect to initial intra-IIC (ICAPS), $F(1,96) = 1.78$, $p = .19$, $\eta^2 = .02$. initial inter-IIC (INCA), $F(1,96) = 2.54$, $p = .11$, $\eta^2 = .03$, initial levels of critical thinking, $F(1,87) = 1.53$, $p = .22$, $\eta^2 = .02$, and initial levels of self-reflection, $F(1,87) = 1.28$, $p = .26$, $\eta^2 = .02$.

In Table 5.3, the means and standard deviations of other important variables used in this study are presented. The distribution of male/female was not significantly different over conditions, $\chi^2 = 3.37$, $p = .07$, nor was the level of English ($F(1,96) = .29$, $p = .59$, $\eta^2 = .00$), nor the initial level of International Experience, measured by the IE-index for each student ($F(1,96) = .81$, $p = .37$, $\eta^2 = .01$).

Table 5.3. Means, standard deviations (between brackets) and ranges of pre-test measures for the two conditions

Variable	*Condition 1 (N=59)*	*Condition 2 (N=39)*
Gender* (percentage female)	90%	92%
Level of English** (mean + standard deviation) – 1-7 scale	4.71 (1.40) Min: 3.00; Max: 7.00	4.87 (1.49) Min: 3.00; Max: 7.00
International experience*** (mean + standard deviation) – 0-1 scale	.33 (,.24) Min: .13; Max: 1.00	.37 (.27) Min: .13; Max: .88
Percentage students that has taken 5th year course on IC****	12%	15%

* Value of 1 for women and 2 for men; ** Values ranging from 3 (minimal but satisfactory level of English) to 7 (very high level of English) linked to the Common European Framework of Reference for Languages (3 was equivalent to B1 and 7 to C1/C2); *** International Experience index (see footnote below); **** Value of 1 for those having taken the 5th year course, value of 0 for the others.

As described before, all students took the Introduction to IC course at TSU and 13 students also took the fifth year course. Following random assignment of the students into two conditions, no significant differences between the conditions in following the fifth year course were observed ($F(1,96) = .25$, $p = .62$, $\eta^2 = .00$).

3.2 Validity of implementation

No significant differences in implementation between the two conditions were expected, because all participants in both conditions followed the same course, were taught by the same lecturer, in the same way, only at different points in time. In

[45] *Dependent variables included in this multivariate analysis are INCA, ICAPS, critical thinking and self-reflection all for moment 1.*

chapter 4, we showed that multivariate analysis proved that no significant differences between the conditions were observed in terms of types of action, $F(3,12) = .56$, $p = .65$, $\eta^2 = .12$; types of tasks, $F(5,10) = .93$, $p = .50$, $\eta^2 = .32$; in terms or types of activity, $F(4,11) = .48$, $p = .75$, $\eta^2 = .15$, or in terms of course design parameters, $F(4,11) = .66$, $p = .48$, $\eta^2 = .36$. Subsequent univariate analyses of variance for each of the types of action, tasks and activities individually did not alter this conclusion.

3.3 Effects of the course experiment

In Table 5.4, the means and standard deviations for the four measures are presented for pre-test (O1 – before the course), experiment 1 (O 2 – when condition 1 followed the course, but condition 2 not yet), experiment 2 (O3 – when both conditions followed the course). To test the effects of the new course on the two dimensions of IIC, motivation, self-reflection and critical thinking, a mixed model analysis was carried out, with condition (two levels) and measurement occasions (three levels) as fixed factors and individuals as random factor. We use a mixed model analysis instead of the more traditional ANOVA approach because it provides a superior method for analyzing the data we have collected (Quené and Van den Bergh, 2004; 2008). The results are presented in Tables 5.5a and 5.5b. In the Tables we present the number of degrees of freedom, variable coefficients (to show whether effects are positive or negative), effect sizes (based on Cohen, 1988 – the ratio of differences of means by the standard deviation), and p-values (to show the level of statistical significance).[46] The variable coefficients show the differences between conditions (condition effect at different occasions) as well as the differences between conditions at different effect moments (e.g. moment1 minus moment 3).

For all four variables, at the start both groups scored similar (no effect of condition on moment 1; first row of Table 5.5a and 5.5b). This is in line with the results presented in section 5.3.1 above.

[46] *An effect size lower than .30 is small, an effect size larger than .80 is called a large effect, and sizes in between are medium effect sizes – based on Cohen's (1988) formulation of rules for interpretation of the size of the effects.*

Table 5.4. Mean and standard deviation of measures for the two experimental conditions

Variable	*Scale*	*Pre-test (O1)*		*Experiment 1 (O2)*		*Experiment 2 (O3)*	
	Min – Max values	*Condition 1 N=59*	*Condition 2 N=39*	*(Condition 1) N=59 Experimental group*	*(Condition 2) N=39 Control group*	*(Condition 1) N=59 Control group*	*(Condition 2) N=39 Experimental group*
Intra-IIC – (ICAPS)	1 – 7	4.92 (.64)	5.07 (.41)	5.89 (.35)	4.94 (.48)	5.52 (.62)	5.72 (.53)
Inter-IIC – (INCA)	1 – 5	2.31 (.31)	2.21 (.30)	3.80 (.39)	2.18 (.36)	4.04 (.33)	3.86 (.29)
Critical thinking	1 – 7	5.75 (.74)	5.53 (.85) [$$]	6.36 (.51)	6.01 (.75) [++]	6.38 (.50)	6.47 (.42) [£]
Self-reflection	1 – 7	5.73 (.75)	5.53 (.89) [$$]	6.33 (.56)	5.71 (.70) [++]	6.39 (.48)	6.44 (.44) [£]

[$$] Number of observations is 30; [++] Number of observations is 23. [£] Number of observations is 35[47].

Table 5.5a. Mixed model results for intrapersonal and interpersonal dimensions of IIC

	Interpersonal dimension of IIC				*Intrapersonal dimension of IIC*			
	Df	*Coefficient*	*effect size*	*p-value*	*Df*	*Coefficient*	*effect size*	*p-value*
Condition effect occasion 1	192	-.08	.30	.232	192	.05	-.29	.667
Condition effect occasion 2	192	1.45	4.85	.001	192	1.15	1.80	.001
Condition effect occasion 3	174	.18	.53	.011	202	-.20	-.39	.063
Effect moment condition 2 (M1-M3)	192	-1.65	4.91	.001	192	-.66	1.25	.001
Effect moment condition 2 (M2-M3)	192	-1.68	5.02	.001	192	-.78	1.49	.001

[47] *The number of observations for moment 2 condition 2 are more limited because several students – having the impression the questions were the same without having done anything (but wait for their turn to participate in the new course on IC, did not fully fill in the questionnaires, leading to a lower number of questionnaires filled, also because partial responses are not included.*

Table 5.5b. Mixed model results for critical thinking and self-reflection

	Critical thinking				*Self-reflection*			
	Df	*Coefficient*	*effect size*	*p-value*	*df*	*Coefficient*	*effect size*	*p-value*
Condition effect occasion 1	174	.29	.34	.054	175	.26	.34	.086
Condition effect occasion 2	180	.47	.63	.003	181	.73	1.08	.001
Condition effect occasion 3	196	-.07	-.12	.585	202	-.05	-.08	.718
Effect moment condition 2 (M1-M3)	179	-.92	1.47	.001	181	-.93	1.46	.001
Effect moment condition 2 (M2-M3)	187	-.49	.78	.001	189	-.79	1.25	.001

Looking at the effect of instruction overall (i.e. when we compared the group of students before any class and after all have followed the course on IC), we found a significant main effect as well as a significant interaction effect between condition and time, as is shown in the second last row in Tables 5.5a and 5.5b. The level of significance is .001 for all four variables, indicating significant changes in levels of both dimensions of IIC, levels of critical thinking and self-reflection. After instruction in condition 1, at measurement occasion 2, there was a highly significant difference between conditions as a result of instruction for all four variables (shown in the second rows of Tables 5.5a and 5.5b). The levels of significance were all at .001 (except for critical thinking where it was .003). The effect of the second phase of instruction, when condition 2 was assigned to the experimental instruction, was significant for all four variables; i.e. there was a significant interaction effect between condition and time between moments 2 and 3 – as the last rows in Tables 5.5a and 5.5b show. This implies that the first two hypotheses of this chapter have been confirmed: the course has stimulated growth of both intra-IIC and inter-IIC significantly.

Both groups function on the same level at occasion 3 but for INCA; a prolonged effect was observed on measurement occasion 3. At moment 3, we observed for intra-IIC, self-reflection, and critical thinking no significant difference between conditions. However, for inter-IIC a statistically significant difference between conditions was observed (p = .011). With the research design used, this implies a prolonged effect of the interpersonal dimension of IIC. Therefore, the fourth hypothesis has been confirmed.

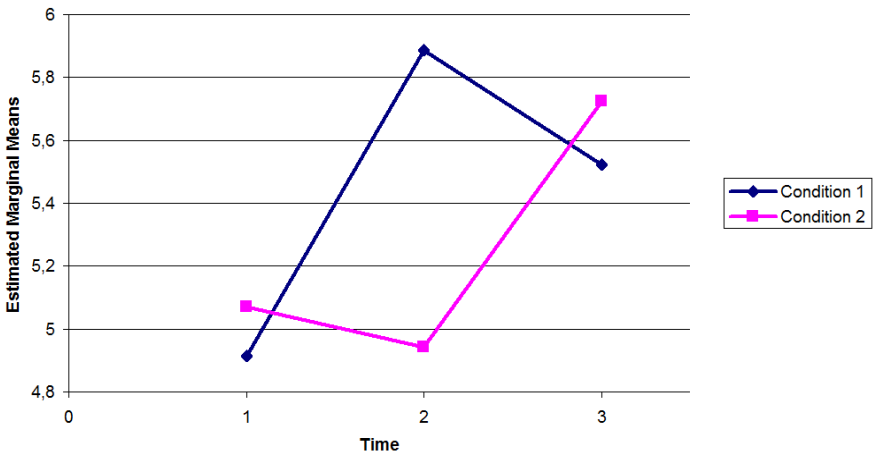

Figure 5.2a Effects on the levels of IIC: intra-IIC.

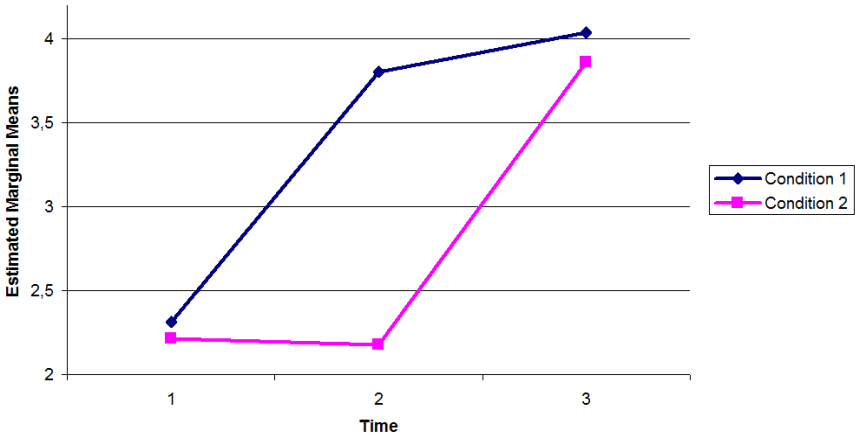

Figure 5.2b Effects on the levels of IIC: inter-IIC.

A plot of estimated marginal means over time, as shown in Figure 5.2a, shows the interaction between condition and time for intrapersonal IIC development.[48] After being taught for three weeks, students in condition 1 score significantly higher than students in condition 2, who had not (yet) taken the course. Students in condition 2 then scored significantly higher when they were taught in period 2. Looking at interpersonal IIC development in Figure 5.2b, after condition 1 had participated in the new course, the level of inter-IIC of those students increased significantly while the level of inter-IIC of the other condition remained the same. After condition 2 also followed the course, the level of inter-IIC of participating students in condition 2 increased significantly. Between moments 2 and 3, we see the increase in inter-IIC which is statistically significant; i.e. there is a pro-longed effect of the course.

The third hypothesis postulates that intra-IIC is affected less strongly by the IC course than inter-IIC, because the former involves fundamental changes in intrapersonal development regarding intercultural frames of mind, semantic schemes, values, etc., while the latter represent the much more practical manifestation of intrapersonal development in dialogue with the others, that – when practiced regularly – can develop into automated responses in intercultural situations. When looking at Table 5.5a, comparing size effects of the intrapersonal dimension of IIC versus the interpersonal IIC dimension, we see that the effect size in the latter is much larger (4.85) than in the former (1.80), confirming our hypothesis.

[48] *Estimated marginal means are defined as the mean value averaged over all cells generated by the rest of the factors in the model.*

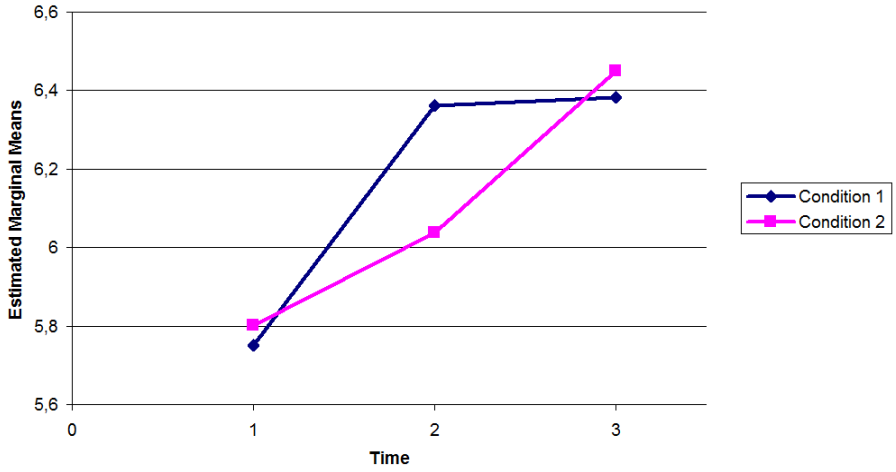

Figure 5.3. Effects on the levels of critical thinking.

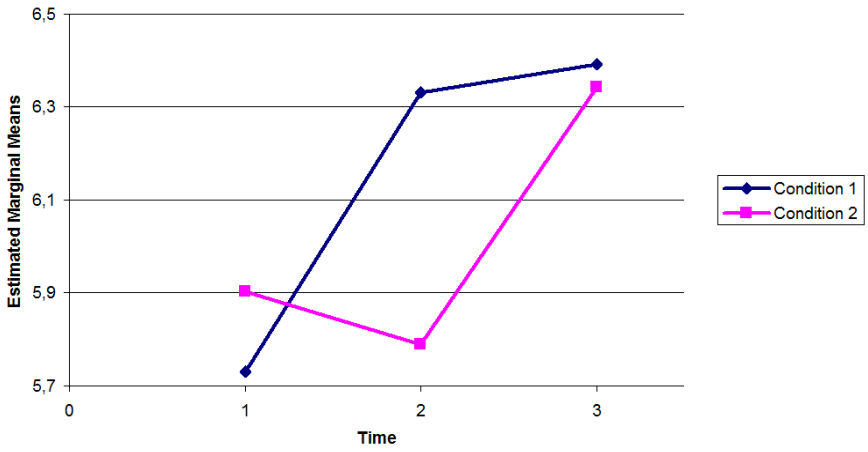

Figure 5.3. Effects on the levels of self-reflection.

Figure 5.3a shows a significant increase in the level of critical thinking for condition 1 as expected. For condition 2 during experiment 1, the control group for experiment 1, seems to also experience an increase (visually) but this effect is statistically insignificant as the mixed model results show. After condition 2 has also taken the course, both conditions are not significantly different. Figure 5.3b shows the effects

of the IC course on self-reflection. Analysis of whether conditions after following the new course were significantly different with respect to self-reflection showed that it was not the case.

3.4 Exploring interaction effects

We explored the data whether students with higher levels of intrinsic motivation, higher levels of English, higher levels of International Experience, or those that have taken the 5th year course in IC would profit most from the IC course because it stimulates the development of IIC, critical thinking, self-reflection in a setting that encourages intellectual development through intra- and interpersonal growth, which is new for most students. We found a multivariate significant interaction effect between the level of intrinsic motivation and growth of interpersonal IIC. Having divided the measured levels of motivation of the students in four, we find that students with significantly higher levels of motivation, also growth faster intrapersonally. Pillai's trace = .15, $F(4,184) = 3.85$, $p = .01$, $\eta^2 = .15$. We did not find interaction effects between levels of intrinsic motivation and the other variables.

We also found a univariate significant interaction effect between level of English and critical thinking: the higher the level of English, the higher the measured critical thinking skills of the participants.

Having tested extensively for interaction effects between the level of International Experience and our course variables, we did not find any significant interaction effects.

Having anticipated that students that have followed the fifth year course could benefit significantly more than those that did not, we did not find an interaction effect between fifth year course and levels of IIC, implying that following the 5th year course in IC had no effect on performance in this course.

4. CONCLUSIONS

Having implemented a pre-test versus post-test design for two conditions, we have been able to cross-validate the results two times, following the use of switching replications (Shadish, Cook and Campbell, 2002). We have hypothesised that a course on IC based on Kholodnaya's model of intellectual development, comprising of intrapersonal and interpersonal development should enhance the students' level of IIC, critical thinking, and self-reflection.

Our first two hypotheses were confirmed: the course affected both intra-IIC and inter-IIC significantly, with large effect sizes. We included two dimensions of ICC in this study to shed light on the intra- as well as interpersonal development of IIC. The more intrapersonal related dimension of IIC taps into personal development of tolerance of cultural stress, and willingness to experiment with the cultural self through cognitive, meta-cognitive and intentional experiences, thus leading to increased IIC. The interpersonal dimension focuses more on developing critical cultural awareness and learning in a dialogue – feeding into the intrapersonal development process.

We found that – as mentioned in hypothesis three – the growth rate of the intra-IIC dimension appears to be significantly lower than the inter-IIC dimension. We hypothesised that his was due to the fact that intrapersonal development (i.e. a student's way of coding information, semantic structures, cognitive schemes) takes place at a deeper personal level than interpersonal development (i.e. the manifestation of intrapersonal development in the exchange of information with students with other depths and degrees of intrapersonal development). The latter, moreover, can become automated to a certain extent when reactions are applied to recurring situations.

We have also hypothesised on the existence of a significant prolonged effect of the IC course for the interpersonal dimension of IIC. The results show, that there is indeed a statistically significant prolonged positive effect of following the course in terms of the interpersonal side of IIC development, which supports our theory. For the intrapersonal side of IIC, no significant prolonged effect is found, which is in line with our understanding that a lasting effect in terms of this dimension of IIC takes much more time to form because it involves developing new personal views, and changes in semantic schemes, beliefs and cognitive styles. This is different for interpersonal IIC that encompasses more practical skills in concrete intercultural situations.[49] Intrapersonal development of IIC is not restricted to foreign cultures alone but also to 'otherness' within domestic cultures, which implies that once it has been developing – for example because of a course in IC designed to do so – one interprets new intercultural encounters differently (along the lines of Kholodnaya's (2002) model of development); i.e. the cognitive system for interpretation has changed and keeps changing by interpreting new situations. This mechanism is fundamental but slow. Rather a small change in the cognitive system is expected to manifest itself in different approaches to interpersonal IIC and in different ways engagement of the student with the environment, in searching for and obtaining different practices and pieces of information from the environment.

The levels of critical thinking and self-reflection also increased significantly for both conditions upon following the course on IC, fulfilling our fifth hypothesis.

Running several tests for interaction effects, we found two significant interaction effects. First of all there is an interaction effect between levels of intrinsic motivation and growth of intra-IIC. The higher the levels of intrinsic motivation of students, the more they benefit from the course in terms of intra-IIC Secondly, between level of English and critical thinking also an interaction effect was observed. The higher the level of English, the more the students would engage in and develop their critical thinking skills. All other interaction effects were not significant; neither of the level of English, nor of International Experience nor the fifth year course.

The goal of the chapter has been to look at if and how a model for intellectual development combined with learning in a dialogue could provide insights into the way intercultural competences are intellectually processed and grow; i.e. how the two

[49] *For inter-IIC there may be a prolonged effect, but only after a much broader multiple-course development of this dimension of IIC, not after just one course.*

dimensions of IIC are enhanced. It has touched upon several other issues that are beyond the scope of this research, but that are worth mentioning. First of all, this course on IC has been designed in order to test the theoretical framework of intellectual development and learning in a dialogue. This full course has used existing materials. Further research could look into how adapting the prototype course by further changing the content and materials would affect the two dimensions of IIC. Second, further research into the realms of other social science courses like economics or politics could be carried out to identify which aspects are comparable to a course on IC and which aspects are not. Third, further research into the combination of stimulating IIC and value-loaded learning (Frijters, Ten Dam, and Rijlaarsdam, 2008) could be carried out. Fourth, the tests and course materials could be translated into Russian and the working language of the course could be changed into Russian to see what effects the language factor has on learning about IIC. Finally, it would be interesting to change the proportion of intrapersonally focused versus interpersonally focused activities in the course and see whether more activities aimed at intrapersonal stimulation might actually lead to more growth with respect to this dimension of IIC.