Students' goal preferences, ethnocultural background and the quality of cooperative learning in secondary vocational education

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Chapter 4

INSTRUCTING COOPERATIVE LEARNING; TEACHER RELATED CONDITIONS STEERING EFFECTIVE COOPERATIVE LEARNING PROCESSES OF STUDENTS IN SECONDARY VOCATIONAL SCHOOLS

[3]

Abstract

In this study, we examined the relationship between the quality of cooperative learning (CL) processes and students' perception of conditions for the quality of CL steered by teachers, in the course of a year. Subjects were 1016 students in secondary vocational schools. Two questionnaires were used. The first measured students' perceptions on the extent that they have been taught skills and knowledge for CL, teachers clarity on rules for CL and teachers monitoring, intervention and evaluation behavior. The second questionnaire measured students' perceptions on the quality of CL. It was found that the extents that students were taught skills and knowledge for CL and teachers' clarity on rules for CL were highly related to the quality of CL, during all three waves. The quality of CL was evaluated most favorably at its best during wave II when scores on all teacher related conditions were also highest. We distinguished between a group of ineffective and effective cooperators that completed questionnaires at all three waves and found that effective cooperators had higher scores on all scales, in particular on the extent that they were taught skills and knowledge for CL.

Key words: teacher behavior, cooperative learning, secondary vocational schools

[3] This Chapter is based on: Hijzen, Boekaerts and Vedder. *Instructing cooperative learning: teacher related conditions steering effective cooperative learning processes of students in secondary vocational education:* Manuscript submitted for publication in: Teachers and Teaching: Theory and Practice

INTRODUCTION

Cooperative Learning (CL) methods are generally acknowledged to promote deep level processing, positive peer relationships, social skills, positive attitudes and increased motivation towards school subjects, as well as interracial acceptance (e.g., Cohen, 1994; Slavin, 1995; Webb & Palincsar, 1996). Made enthusiastic by this resourcefulness, many secondary vocational schools experiment with and introduce a wide range of cooperative instructional methods. Unfortunately, in daily classroom practice many attempts to stimulate students to engage in CL fail. During CL, students can easily hide in the group and free-ride with the more active group members (Cohen, 1994; Salomon & Globerson, 1989), resulting in a reduction of effort. Although placed in groups, in reality students often work individually instead of together (Vedder, 1985; Veenman, Kenter, & Post, 2000; Witteman, 2003). Furthermore, some students perceive working in groups mainly as an opportunity to chat and disturb each other's learning processes (Shanahan, 1998). In the present study we examined the learning conditions that teachers in secondary vocational education create in order to promote students' CL processes. The study is embedded in a larger project on motivational self-regulation strategies of students' enrolled in Dutch secondary vocational education. In previous studies (Hijzen, Boekaerts, & Vedder, 2006) it was found that the quality of CL was related to students' goal structure. Belongingness goals (e.g., I want to get along with my peers), mastery goals (e.g., I want to learn more about my profession) and social support goals (e.g., I want to help others in case they need help) were found to be related to the way students cooperate. Especially students that gave a high rating for these latter goals perceived a high quality of their CL processes. Furthermore, the availability of emotional and academic peer support predicted the quality of CL. In the same study we explored classroom context variables, such as task characteristics, the group composition, reward structures and students' perceptions on teacher behavior. The study showed that -apart from students' goal preferences- contextual factors that were related to teacher behavior predicted the quality of CL. Students indicated that the extent that they were taught knowledge and skills for effective CL, as well as teachers' clarity on rules for CL were important variables determining the quality of CL**.** A previous in-depth study (Hijzen, Boekaerts, & Vedder, submitted) also revealed the importance of teacher behavior in influencing students' engagement levels during CL. For example, students reported that their motivation to engage in CL was strongly determined by teachers' instructional behavior. A typical statement that referred to this issue was: "*I would definitely like to get more teacher support. I mean … that when I have a question and this person just gives you a book and says here it is and walks away, what kind*

of help is that?" In our opinion the role of the teacher has been underestimated in many studies; the focus has been too much on the assumption that students consciously regulate and steer their learning processes themselves, independent of what teachers do.

The present study was set up to further explore the relationship between students' perceptions on teachers' behavior in relation to the quality of CL in the course of a year. In previous studies (Hijzen, Boekaerts, & Vedder, 2006) we focused on these relationships in a cross-sectional design. In the present study we investigate whether changes or stability in students' perceptions of teacher related conditions for CL over time coincide with changes or stability in the quality of CL. Insight into the relationship between teachers' instructional behavior and the quality of CL may be helpful for determining leads for future intervention purposes, directed at improving CL in secondary vocational schools. Various studies (e.g., Boekaerts, de Koning, & Vedder, 2006; Cohen, 1994; Hijzen, Boekaerts, & Vedder, 2006; Slavin 1995, 1996; Webb & Palincsar, 1996) investigated and reviewed effects of particular conditions on the quality of CL. In earlier studies we found that the types of teacher related conditions for CL related to the quality of CL, concerned students' perceptions on teacher control behavior (monitoring, intervention and evaluation instances) and instructional behavior (the extent that students were taught rules for CL and the extent that they were taught knowledge and skills for CL).

In the present study, students' perceptions on teacher related conditions for CL and the quality of CL will be measured three times in the course of a year. Conceivably, some types of teacher related conditions are less important in a later stage than at the beginning of working in CL teams. For example, we hypothesize that monitoring behavior will become less significant to students after they become more experienced in CL. Next, we will describe the (expected) relationships between the quality of CL and teachers' control behavior and the extent that they taught skills and rules for CL. We will conclude this section with our expectations and hypotheses on stability and change of these relationships.

Teachers' control behavior

In the last two decades the classroom setting in senior vocational schools in the Netherlands has gradually changed from an exclusively, traditional, competitive, and individualistic educational setting to a setting with more attention on cooperative learning that requires and

stimulates both cognitive and motivational self-regulation skills (Boekaerts & Minnaert, 2003). Cooperative learning refers to 'a set of instructional methods in which students are encouraged and required to work together on academic tasks' (Slavin, 1987). The term usually refers to alternative ways of organizing classrooms that contrast with individualistic and competitive classroom organizations (Webb & Palinscar, 1996).

While learning activities are always performed by students, teachers can engage in a wide range of behaviors to facilitate and regulate students' behavior in the classroom (Brophey & Good, 1986; Resnick, 1989; Vermunt & Verloop, 1999). The way the teacher instructs and guides the CL process influences students' engagement in CL and academic achievements. Students' CL processes and performance are positively affected when teachers encourage high level cognitive interactions (i.e. discussions, explaining and reflecting on problem solving strategies) (Chinn, O'Donnell, & Jinks, 2000; Webb, Troper, & Fall, 1995). It is suggested that teachers should only provide help on request. Direct supervision during CL processes is not desirable; students' feelings of responsibility will decrease (Cohen, 1994). Ames (1992) found that a mastery goal orientation will be promoted when teachers allow students to participate in decision-making, share responsibility and grant them increasing independence with regard to the learning process. A mastery goal orientation is associated with high levels of engagement, responsibility and academic achievements (Deci & Ryan, 2000).

It has also been found that teachers should *monitor* students learning and *intervene* to provide assistance (Johnson & Johnson, 2002). More specifically, teachers need to increase students' group skills, as long as students lack experience with CL methods and prevent off-task behavior. Before students start working on the group task, the teacher should clearly specify the objectives and *rules* for the lesson both with respect to social and academic aspects of the task. Furthermore, it is also important that teachers *evaluate* the group processes with the CL teams afterwards. Finally teachers should diminish the level of coaching in the course of learning processes, so that students increasingly take responsibility for their own learning processes.

Teachers' instructional behavior

Students need a number of *cooperation skills*, such as the skills to express their own opinion, stimulate each other, provide and receive help, listen to each other and clarify their current understanding of the task (Cohen, 1994; Ros, 1994; Webb & Palincsar, 1996). It is important

to acknowledge that students' early attempts at regulating their own work may not always be successful. Effective CL requires practice. Comprehensive programs of team building and prosocial skills development seem to improve peer-to-peer interaction skills (Webb & Palincsar, 1996). Many other scholars have shown that explicit teaching of CL skills supports an improvement of the quality of CL (e.g., Gillies & Ashman, 1996; Hoek, Van den Eeden, & Terwel, 1999; Webb & Farivar, 1994). Gillies (2003) mentioned the following skills: actively listening, considering the other person's perspective on issues, stating ideas freely, being responsible for one's own behavior and constructively critiquing the ideas presented as interpersonal skills that facilitate communication. Teachers need to model positive interpersonal skills, have students practice the skills, and encourage the students to process how effectively they are performing the skills (Phipps, Phipps, Kask, & Higgins, 2001).

Stability of conditions and the quality of CL

The study has a longitudinal design in order to investigate the stability of conditions and the quality of CL over time. We hypothesized that it is crucial that teachers keep paying attention to teaching skills, knowledge and rules for CL during all three data-waves. In order to become independent cooperators it is essential that students need to know how to cooperate (e.g., Webb & Palincsar, 1996). However, with regard to teachers' control behavior we expect that decreasing control promotes effective CL over time. We expect that students become more independent and skilled at working in CL settings, over time. Therefore, we argue that students need more extrinsic stimulation (as in teachers monitoring, and interventions) initially, but that their stimulation should be decreased once they have become sufficiently skillful (e.g., Johnson & Johnson, 2002). We expect differences between effective and ineffective cooperators; we expect that ineffective cooperators need to be stimulated more than effective cooperators. The latter need their teachers to monitor their CL processes and intervene during a prolonged period.

Research question

The main question of the present study is: "Which teacher related conditions are related to the quality of CL processes, and are these relationships stable in the course of a year?" We expect that a stability of teaching students' skills and knowledge and rules for CL, and a decrease in

teachers' control behavior during the second and third data wave correspond to an increase in the quality of CL from the first to the third wave.

METHOD

Subjects

Participants in the study were 1016 students from 11 different schools for secondary vocational education in the Netherlands. The Netherlands have 42 regional educational centers for secondary vocational education. They all received a letter in which we explained the purpose and relevance of the study and invited them to participate. Non-participating schools had a variety of reasons. The most frequent reasons concerned the time investment of students and teachers and the extra organizational burden of participation in yet another research project. The eleven schools that participated were spread evenly across the Netherlands. Schools for secondary vocational education offer a variety of programs, preparing students for particular professional careers. Secondary vocational school starts for most students at the age of 16 after they completed a junior vocational school. Senior vocational school delivers educational programs for four broad competency levels. At the first level students train to become assistants (6 to 12 months). At the second level they have two to three year courses for basic vocational training. At the third level students are enrolled in professional training and at the fourth level they participate in middle-management training (3 to 4 years) or in specialized training courses (1 to 2 years). Most students finishing secondary vocational school prefer to enter the labor market and do not proceed in further studies[4]. We distinguish engineering, ICT, retail and administration, food and tourism and health and welfare programs. Participating students were students that worked at least 45 minutes per week in CL settings. Table 1 presents the distribution of participating students by program type and level. A closer look at Table 1 shows that most students were enrolled in health and welfare and level 4 programs. Only a few students were enrolled in level 1 and food and tourism programs. For exploring longitudinal data we selected students that participated in all three data-waves. Only 260 students completed all questionnaires at all measurement points. The loss of students between measurement points was considerable, partly due to students' decisions not to participate in all rounds of data collection and partly because students changed schools or program type or were absent for other reasons. However, since students

[4] For further information on secondary vocational education in the Netherlands, see Euridice database on education, 2003 website.

from different program types and levels were not equally distributed (for example, only three ICT-students completed all three questionnaires), we limited analyses to the group that was most representative to the total sample and which was also the largest group; the health and welfare students ($N = 120$).

Table 1: Sample characteristics.

	Program Level				
Program Type	Level 1	Level 2	Level 3	Level 4	Total
Engineering		3	7	63	73
ICT		10	21	91	123
Retail & Administration	10	22	41	108	181
Food & Tourism	1	13	5	4	23
Health & Welfare	43	61	177	355	616
Total	54	109	251	602	1016

Instruments

Table 2 presents an overview of scales, sample items and Cronbachs' alphas of the different scales used in this study. The quality of CL was measured with the questionnaire for the Quality of Cooperative Learning (QCL). Originally the list comprised four subscales, namely students' perception of the quality of *group cohesion*, students' perception of *interdependence within the group,* students' perceptions of the quality of their *cooperation skills* and students' *attitude towards CL*. Items in these subscales were "I feel part of my group", "In this group we support each other", "I know how to support my group members, when they need help", and "I prefer to work in a team over working individually". Students had to indicate on a four-point Likert scale to what extent they agreed with each statement. Response categories ranged from "I disagree very strongly" to "I agree very strongly". These subscales were highly correlated and together measure the quality of CL. A Principal Component Analysis on these four subscales resulted in a one-factor solution, representing an overall QCL score. This factor had an Eigenvalue of 2.4 and it explained 59 % of the total variance.

Table 2: Categories, sample items, number of items and Cronbachs' alpha coefficients.

Category	Sample item	# items	Alpha
Perceived Quality of CL			
Quality of CL	I perceive myself as part of this group	31	-
Conditions Subscales			
Rules for CL	Before we start to work on the group task, teachers explain us how to plan	9	.87
Cooperation skills	At this school we learned to listen to each other during group work	8	.86
Teacher: monitoring	While working on the group task the teacher evaluates the progress	5	.83
Teacher: intervention	When we are very noisy during group work, teachers intervene	5	.74
Teacher: evaluation	After we finish the group task, the teacher explains what went well and what needs improvement	4	.80

The questionnaire for the Conditions for CL (CCL) aimed to measure students' perceptions of the extent that teachers create or maintain conditions for the quality of CL. Items were based on review studies on the conditions for productive small-groups (e.g., Cohen 1994; Ros, 1994; Slavin 1995; Webb & Palincsar, 1996). The questionnaire consisted of five scales. A first scale captured students' *evaluations on the extent that they have been taught cooperation skills and knowledge at their present schools skills*. A second subscale aimed to measure students' *perceptions on the clarity of the rules for effective CL*. Items in a third scale aimed to assess teacher *monitoring behavior*. The fourth scale assessed *teachers' interventions* in cases of off-task behavior. The fifth scale aimed at measuring *teachers' evaluation* methods. Sample items are presented in Table 2. Students were asked to evaluate the conditions during the last four weeks. Response categories (4) ranged from "I disagree very strongly" (1) to "I agree very strongly" (4).

Procedure

Questionnaires were administered three times, once during the students' first year and twice during their second year, with intervals of six months. Researchers assisted students while

administering the questionnaires. It took students one hour on average to complete the questionnaires.

RESULTS

First we will present an overview of means and standard deviations of the time spent on CL, interrater agreement, and the instructional subscales, and the relationship with the quality of CL as reported for the whole sample at three data-waves (wave I: $N = 1016$, wave II: $N = 619$, wave III: $N = 424$).

Organization characteristics

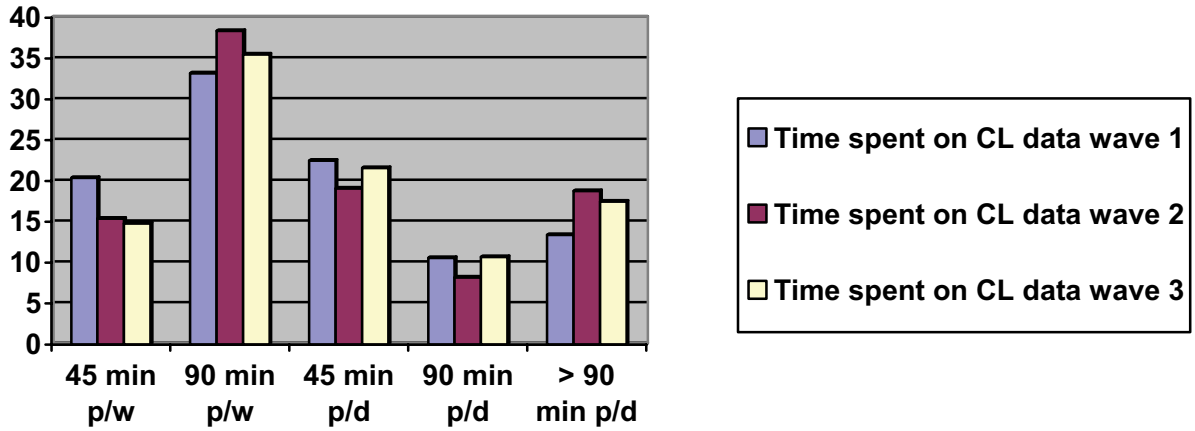

Figure 1: Time spent on CL.

Figure 1 presents the amount of time spent on CL of students in the total sample. Most students (33 percent) spent approximately 90 minutes per week in CL teams and 23 percent spent at least 45 minutes per day in CL teams.

Earlier we reported about the quality of the instruments. Another aspect concerning the quality of the data is the interrater agreement, after all the way this study is designed allows exploring to what extent students agree on their evaluations of teachers control and instructional behavior. We calculated intra-class agreements (ICC) on all three waves, for all classes. The ICC score (Rho score) is an index of reliability for measurements of the same phenomenon. With the ICC score we can investigate whether several raters independently measured the same phenomenon. An instrument with Rho score 1 will produce the same measurement each time it is used, while a Rho score of 0 will produce different scores each time it is used (Hayes, Walton, Szomor, & Murrell, 2001). Reliability coefficients ranged from .80 to 1.00. Interestingly, students within the same classes highly agreed with each

other, only five out of 32 classes had intra-class agreement coefficients that were below .99. This means that individual students' scores are indicative of what happens at class level in terms of conditions for and the regulation of CL.

Students' perceptions on teacher behavior and the quality of CL at three data waves

Table 3 presents mean scores, standard deviations, and correlation coefficients of the five teacher related conditions subscales and the quality of CL, of the total sample at three waves.

Table 3: Pearson correlation coefficients between the quality of CL and conditions for CL.

	Data wave 1				Data wave 2				Data wave 3			
	N	*M*	*SD*	*r* QCL	*N*	*M*	*SD*	*r* QCL	*N*	*M*	*SD*	*r* QCL
Quality of CL	1135	2.83	.29	-	619	2.91	.29	-	434	2.88	.32	-
Rules for CL	1170	2.46	.44	**.25****	615	2.55	.46	**.33****	434	2.46	.41	**.28****
CL knowledge and skills	1171	2.67	.41	**.34****	616	2.74	.43	**.41****	434	2.71	.41	**.39****
Teacher: monitoring	1170	2.54	.52	.18**	616	2.61	.49	**.28****	432	2.46	.52	.12
Teacher: intervention	1166	2.45	.49	**.20****	614	2.51	.54	**.25****	432	2.36	.53	.18**
Teacher: evaluation	1168	2.35	.57	.18**	614	2.40	.67	**.20****	432	2.19	.59	.14*

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

Inspection of Table 3 shows that, students were generally positive on the quality of their CL processes. The highest scores were found during wave II. Scores on the five subscales of teachers' instructional behavior were somewhat lower and seem quite stable over time; generally scores are higher during wave II and lower during wave I. Scores on teachers' evaluation behavior during wave III, were quite low.

In order to explore the relationship between the teacher related conditions and the quality of CL, correlation coefficients between the scales of the conditions and the quality of CL at three measurement points, were calculated. As described in the introduction during wave I, we expected positive correlations between all scales of teachers' instructional behavior with the quality of CL. We expected that during wave II and wave III the association

between the scales that measured teachers' control behavior and the quality of CL would be less significant than during wave I. Because of the large sample all subscales measuring teacher related conditions were related to the quality of CL. However, we will limit the discussion to correlation coefficients above .20. In line with our expectations, the quality of CL was related to the subscales that measured students' perceptions on the extent that rules for CL were clearly explained by their teachers and their evaluations on the extent that they were taught CL skills and knowledge. This was the case for all three waves. During wave II teachers' monitoring, intervention and evaluation behavior were also related to the quality of CL, which was in contrast with our expectation that teachers' control behavior would be negatively related to the quality of CL at a later stage of CL. In line with our expectations, during wave III only the scales that measured students' perceptions on the extent that they were taught skills and knowledge for CL, and teachers' clarity on rules for CL were related to the quality of CL. However, comparisons of correlation coefficients of teachers control behavior and the quality of CL between wave III and the other two waves, resulted in only one significant difference, namely the relationship between teachers monitoring behavior was significantly less strong during wave III than during wave II (Z = -2, 65, p = .003).

The analyses described in the latter two paragraphs function as a framework for understanding longitudinal results of the group health and welfare students that completed the questionnaires at the three data points. In order to explore whether students' perceptions on teacher control and instructional behavior were stable in the course of a year, we will explore the longitudinal data next.

Stability and changes of conditions for effective cooperative learning

In order to investigate whether the students that completed the questionnaire at all three data-points (N = 120) were stable in their ratings on the five subscales in the course of a year, we conducted GLM repeated measures analyses separately for the five subscales, as within-subjects factors at three points in time. Table 4 presents an overview of the scores.

A main effect was found for rules for CL for measurement time (Wilks' F [2, 136] = 14.98, p = .000, η^2 = .18). Measurement time also (weakly) co-varied with monitoring (Wilks' F [2, 139] = 3.28, p = .040, η^2 = .04) and with the evaluation scores (Wilks' F (2, 136) = 3.07, p =.050, η^2 =.04). Interestingly, scores on all three subscales were significantly higher during wave II. Stability of scores was found for the two other scales, namely students' perceptions

on the extent that they were taught skills and knowledge for CL and teachers' intervention behavior.

Table 4: Mean scores and standard deviations of contextual factors at three data-waves.

	wave I		*wave II*		*wave III*		
	M	*SD*	*M*	*SD*	*M*	*SD*	*Test of within contrasts (p <.05)*
Rules for CL	2.35	.44	2.53	.39	2.44	.45	wave 2>1,3
CL knowledge and skills	2.69	.41	2.76	.41	2.68	.42	
Teacher: monitoring	2.44	.52	2.54	.47	2.47	.49	wave 2>1,3
Teacher: intervention	2.41	.52	2.46	.51	2.39	.51	
Teacher: evaluation	2.21	.54	2.34	.59	2.19	.63	wave 2>1,3
Quality of CL	2.83	.30	2.91	.28	2.89	.27	wave 2>1

We also conducted a repeated measures analysis on the quality of CL. A weak time effect was found (Wilks' F [2, 118] = 3.08, p = .050, η^2 = .05). Inspection of the within subject contrasts table showed that the quality of CL was significantly higher at wave II than it was at wave I. These higher scores parallel the earlier reported scores for all students participating in wave II. In order to analyze the combination of changes in conditions and changes in the quality of CL, we looked for patterns in the quality of CL first.

Longitudinal patterns of the quality of CL and teacher related conditions

We conducted cluster analysis in order to identify groups of students with different longitudinal patterns of the quality of CL. The *k*-means method was used, because this method is sensitive to decisions on the preferred number of clusters and the values for the initial cluster centers. Two clusters were used, based on the interpretability of the resulting clusters and the desire to have a reasonable number of students within the clusters.

The first profile captured students with overall high scores on the quality of CL, with somewhat higher scores on the second data-wave, and the lowest scores on the first data-wave. The second profile grouped students with overall low scores on the quality of CL and similar scores on the three data waves. Sixty-one students were grouped in profile 1 and 59 students were represented by profile 2. The distinction of these two profiles implies that we did not find a group of students that clearly changed their quality of CL in the one-year

period. This finding suggests that whatever teachers do in terms of creating conditions for CL, they do not affect students to the extent that ineffective cooperators become effective.

We hypothesized that ineffective cooperators are more dependent on the teachers' control behavior during the second and third data wave than effective cooperators, who were expected to rely more on the extent that they were taught skills and knowledge and rules for CL. Hence, we expected interaction effects between teacher related conditions and the profiles and hoped that these interactions would reveal the teachers' capacity to adapt conditions for CL to the needs of particular groups of students depending on their repeated quality of CL. A repeated measures analysis was conducted using the five subscales at the three measurement points as within-subject factors and the quality of the students' CL profile as the between subject factor. No interaction effects were found and thus no support was found for our hypothesis. We found a within-subjects factor effect for time though (Wilks' F [10, 88] = 2.68, p =.006, η^2 = .23) and a main between-subject factor effect for quality of CL profile (Wilks' F [5, 93] = 4.77, p = .001, η^2 = .20). Figure 2.1 to 2.5 graphically represent the relationships.

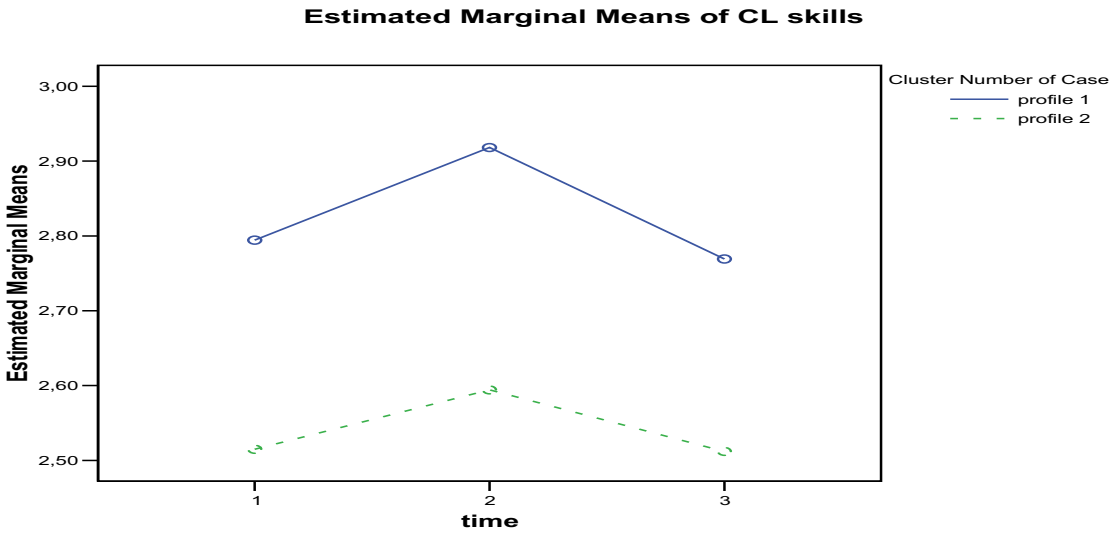

Figure 2.1: Strong and weak cooperators' mean scores on the scale that measured students' evaluations of the extent that they were taught skills and knowledge for CL, at three data waves.

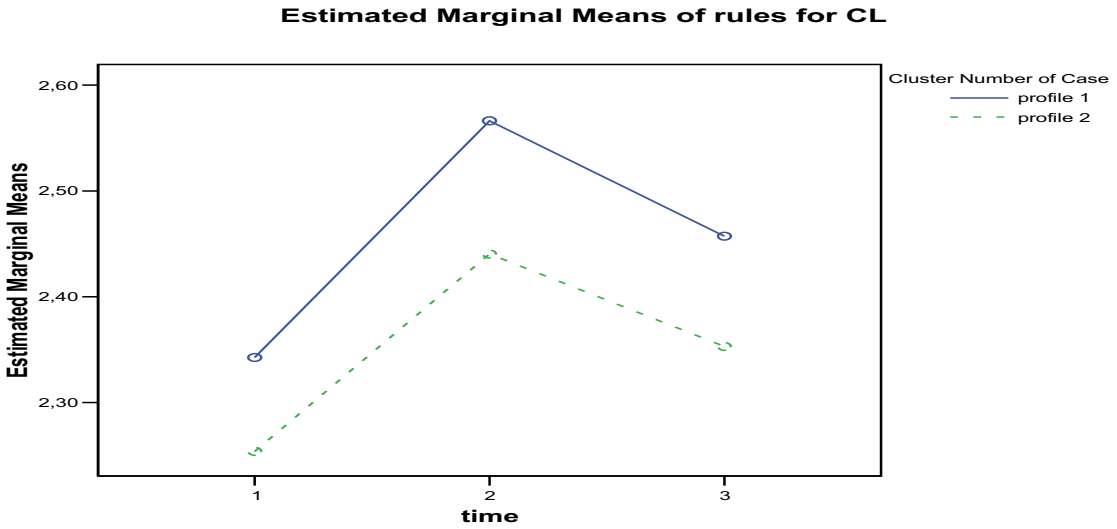

Figure 2.2: Strong and weak cooperators' mean scores on the scale that measured students' evaluations of teachers' clarity on CL rules, at three data waves.

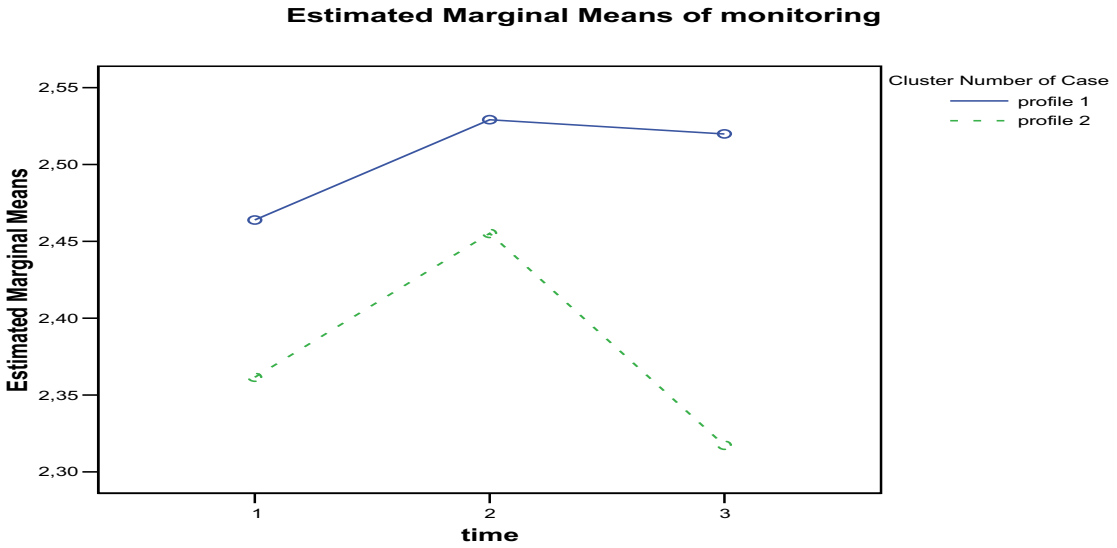

Figure 2.3: Strong and weak cooperators' mean scores on the scale that measured students' evaluations of teachers' monitoring behavior, at three data waves.

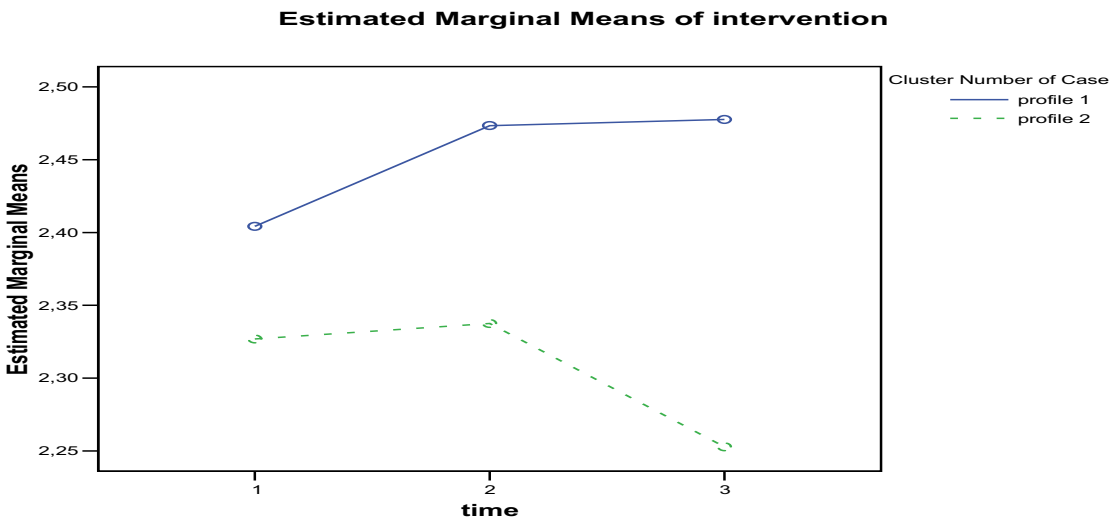

Figure 2.4: Strong and weak cooperators' mean scores on the scale that measured students' evaluations of teachers' intervention behavior, at three data waves.

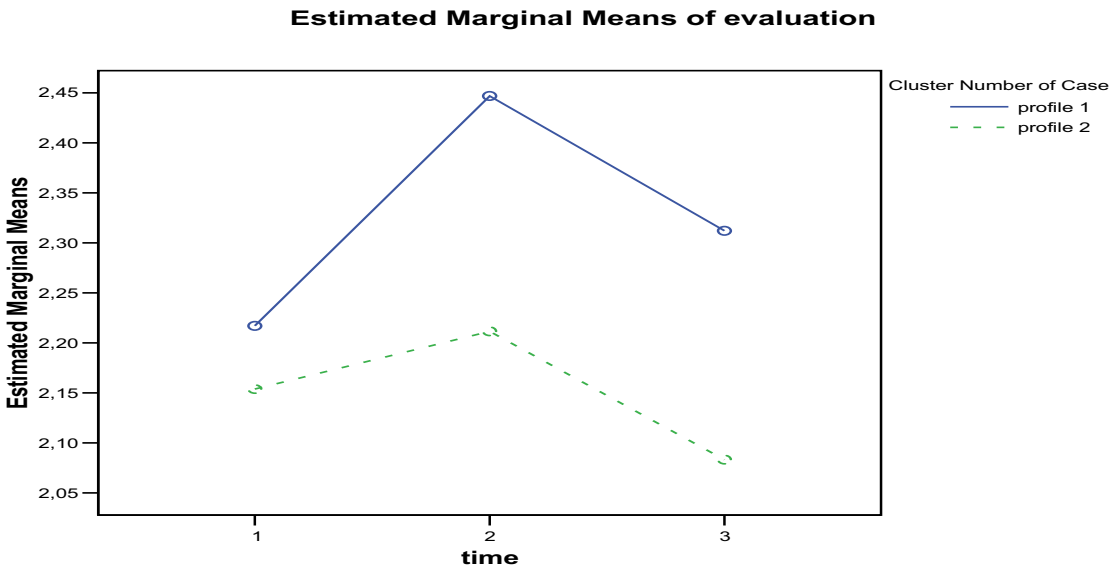

Figure 2.5: Strong and weak cooperators' mean scores on the scale that measured students' evaluations of teachers' evaluation behavior, at three data waves.

The time effect concerned the subscale that measured students' perceptions of the extent to which they were taught skills and knowledge for CL (see Figure 2.1), and the extent that students were taught rules for CL (see Figure 2.2). Posthoc tests showed that scores for both students with the weak and high quality of CL profiles on the quality of CL was at its highest at wave II, confirming our previous findings. For whatever reasons, teachers have adjusted their instruction as regards CL. The findings suggest however that adjustment was hardly for adaptive reasons (e.g., compensating for lacking skills or reported low quality of CL). The

effect that we found resembles a self-efficacy effect (i.e. teachers feel more in control and more positive about themselves when interacting with students who perform and behave the way they want them to). It might be the reason why these students get more attention. Inspection of the plots shows that at all times students with profile 1 (i.e., the high quality profile) scored higher than students with profile 2 on the scales that measured teachers control behavior and teachers' instruction behavior and that the extent that students were taught skills and rules was highest (Figure 2.1 and 2.2) at wave II. Inspection of the plots also shows that the difference between effective and ineffective cooperators was highest for the scale that measured students' perceptions of the extent that they were taught skills for CL (see Figure 2.1); effective cooperators scores were considerably higher than ineffective cooperators scores.

Despite the fact that we were unable to find significant interaction patterns, inspection of the plots showed some interesting trends that are in line with our hypotheses that teachers need to improve their adaptivity. First of all, inspection of Figure 2.3 shows that the weak cooperators perceived a major decrease in teachers' monitoring behavior after wave II. Secondly, inspection of Figure 2.4 shows a similar trend in relation to teachers' intervention behavior. In contrast, the effective cooperators perceived almost no change in teachers' monitoring and intervention behavior after wave II. Moreover, Figure 2.5 shows that for the effective cooperators scores on the teachers' evaluation behavior between wave I and wave II highly increased, whereas this pattern was not that obvious for the ineffective cooperators.

In short effective cooperators can be characterized by high scores on all teacher related conditions. Especially their high scores on the extent that they have been taught skills and knowledge for CL distinguishes effective cooperators from ineffective cooperators. Ineffective cooperators, on the other hand, can be characterized by low scores on all teacher related conditions, particularly their scores on the extent that they were taught skills and knowledge for CL were low. Moreover, they reported that teachers' control behavior highly decreased after wave II.

DISCUSSION AND RECOMMENDATIONS

Our primary objective in this research was to explore the relationship between teachers' control and instructional behavior and the quality of CL. The stability of scores on teacher related conditions and the relationship with the quality was analyzed.

We expected optimal CL processes when students were explicitly taught rules, knowledge and skills for CL and when teachers' regularly monitor the CL process, intervene when the situation required it and evaluate the group process regularly. Moreover, a decrease of teacher monitoring and intervention behavior and a stability of the other variables was expected to predict the best CL results over time. In line with previous findings (Hijzen, Boekaerts & Vedder, 2006), we found that the scales that measured students' evaluations of the extent that they were taught skills and knowledge for CL and rules for CL were most strongly related to the quality of CL at wave I. Complementary findings are that these scales were also related during the other two waves. In other words, we can add to previous findings (Hijzen, Boekarts & Vedder, 2006) that -also in the long run- it is important that teachers make students aware of what is required for working in a CL setting. They should explicitly and sufficiently teach them the necessary skills. More specifically, it is crucial that teachers teach their students how to listen to each other, to evaluate the group process, to discuss, to support group members, to give an opinion, or to solve group conflicts, and explain what is expected of them in terms of goals and the evaluations of CL processes.

We also expected that the relationships between teachers' control behavior and the quality of CL would diminish over time, following either an improvement of the QCL or the maintenance of an already high level of the QCL. However, despite a positive relationship of intervention behavior at wave I, our expectations could not be confirmed. Teachers' control behavior and the quality of CL were also positively related at wave II, while we expected that a decrease in teachers control behavior would predict the quality of CL at a later stage. Of course students need to be monitored when learning how to cooperate, but an unexpected finding is that this scale still contributed to the model during wave II that took place in the students' second school year. Perhaps students were more motivated and independent cooperators in the beginning of their second year as compared to first year students, but why did they still feel the urge to receive teacher guidance and feedback and why did this urge disappear at the time of the third round of data collection? Lack of a strong relationship between the quality of CL and teachers' monitoring, intervention and evaluation processes during wave III may indicate that the students in our sample became indeed more independent cooperators and relied more on their own skills and capabilities.

We expected that a stability of teaching students' skills and knowledge and rules for CL, and a decrease in teachers' control behavior during wave II and wave III correspond to an increase in the quality of CL from wave I to wave III. Cluster analysis on the quality of CL of the health and welfare students that completed the questionnaires of CL at all three waves

showed that we could distinguish between students that had generally high scores on the quality of CL and students that had generally low longitudinal scores on the quality of CL. Inspection of these two groups' scores on the five teacher related conditions showed that teacher related conditions indeed make the difference, at all stages. Students with high scores on the quality of CL scored higher on all teacher behavior subscales. Again the importance of the extent that students were taught skills and rules for CL is illustrated by the large difference on scores between the high and low quality cooperators.

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