

CHAPTER 7: COMPLEMENTARY STUDIES

Dew additional smaller studies were conducted to complement the findings of the main intervention study described in chapter 5.

Observation Study

Purpose

This study was conducted only in Greece and its purpose was to examine possible differences in PE teachers' behaviors in PE settings between Time 1 and Time 2 measurements described in chapter 5 (pre vs post IMPACT intervention) and groups (experimental vs control). Systematic observation of teachers' behaviors was employed using a new observation instrument that relied on the adopted motivational theories in the IMPACT project, i.e., Achievement goals (AGT; Ames, 1992; Nicholls, 1984) and Self-Determination (SDT; Deci & Ryan, 2000).

Participants

Sixteen Greek PE teachers from the larger group of PE teachers who were involved in the main study described in chapter 5, volunteered to participate in this study. Nine teachers were males and seven females; $M_{age} = 52.25 \pm 3.77$ years; teaching experience: $M = 23.58 \pm 4.28$ years. Teaching in one PE class from each of these teachers was filmed twice, the first filming (Time 1; T1) before the delivery of the IMPACT project webinars (October 2018) and the second filming Time (T2) at the end of the IMPACT project intervention (April 2019).

After the T1 measure, PE teachers were divided into two groups: (1) the experimental group ($n = 10$) that attended the five online webinars and implemented the IMPACT principles and (2) the control group ($n = 6$) that did not receive any training and followed their regular teaching program. They taught a total of 299 pupils, seven of them in elementary schools (fifth and sixth grades), five of them in secondary junior schools and four of them in senior high schools. These schools were spread across all over Greece, including north, central and south Greece and both urban and sub-urban areas.

Procedure

The study was conducted with the permission of the Ministry of Education, the approval of the Ethics Committee from the University of Thessaly and the agreement of the coordinators, schools' headmasters, PE teachers, and pupils' parents. The PE teachers and the parents, who allowed their children to take part in the filmed PE lessons, were informed about the research procedure and both filled in a consent form.

Following ethics approval, the leading researcher contacted the headmasters of the schools and the PE teachers. The researcher explained the process in general terms. The given information was that the study would occur in a PE lesson, without changing the schools' daily program and the typical teaching in this class. No reference was made to the PE teachers concerning the motivational climate they create.

Following the researcher visited the schools and filmed teaching in one PE class. To capture the PE teachers' behaviors, a digital camera and a microphone was used, which teachers carried it with them during the PE lessons. The camera was focused exclusively on the PE teachers and not on pupils.

Observational tool

The observational instrument was a modified version of the Multidimensional Motivational Climate Observation System (MMCOS; Smith et al., 2015; Tessier et al., 2013) that had been developed for use in sports contexts. The new instrument was adapted in PE settings to detect the PE teachers' behaviors for the specific lesson (OMMCPE; Observation of Multidimensional Motivational Climate in PE).

The adapted OMMCPE has a similar hierarchical structure of MMCOS. It consisted of 7 lower-order factors (autonomy support, controlling, task-involving, ego-involving, relatedness support, relatedness thwarting and structure), 2 higher-order factors (empowering and disempowering) and 32 items or "*behavioral strategies*". Autonomy support, task-involving, relatedness support, and structure were lower-order factors loading to *empowering* while controlling, ego-involving and thwarting relations were lower-order factors loading to the *disempowering* higher-order factor.

For example, observers rated that a PE teacher was giving emphasis on autonomy support by "*providing space for initiatives*"; being controlling by "*using fear*"; being task-involving by "*supporting teamwork collaboration for learning*"; being ego-involving by "*emphasizing on competition between pupils*"; being relatedness supportive by "*adopting interest and care for all*"; being relatedness thwarting by "*showing negative communication for the pupils*" and finally giving emphasis on structure by "*providing expectations for learning*". Before the observers completed their ratings, they were asked to estimate to what extent the above factors were observed during the PE teachers' lesson and finally, to what extent the PE teacher used empowering or disempowering behaviors. Each of the factors and the overall score (empowering or disempowering) were rated using a scale ranging from 0 (none) to 3 (much emphasize).

Inter-Observer Agreement

The reliability of the instrument requires a high degree of agreement among the raters, which ensures that the coding procedure implements a consistent and reliable approach. Prior to data collection, four volunteers' researchers, in two teams, were selected and trained on the theories of AGT and SDT, and onto the concepts of the observation instrument and its structure (OMMCPE; Observation of Multidimensional Motivational Climate in Physical Education). Each researcher had about 10 hours of intensive courses comprised of presentations, discussions, cooperation, and training with videos. To facilitate researchers' ratings, the leader researcher provided them with a list of behavioral instructions based on the principles of the theories (e.g., explanations on how to estimate the dimensions). Throughout the courses, to accomplish a high level of agreement, the in-charge researcher trained the observers initially by asking them to rate what they watched in videos (according to behavioral instructions) and then compared each other answers. The procedure was repeated until a high symphony among the raters.

When the trained researchers adopted the features of the behaviors and reached a high level of agreement, then they were asked to rate independently. Each rater-observer had 48 videos to analyze and evaluate. The procedure they had to follow was to split the 30 minutes video into three sections of 10 minutes of teaching (3x10min). Each 10-minute segment was observed and rated by the researchers and gave results for the PE teachers' behaviors and teaching. Eventually, a database was created consisted of the mean scores in the three 10 minute segments, including the observers' coding for each OMMCPE's dimension.

Results

In both measures, the Kolmogorov-Smirnov test showed that all data followed a normal distribution ($p > .05$). Differences between experimental and control group PE teachers in the observed variables at T2 (post intervention), separate one way analyses of covariance (ANCOVAs)

were contacted using as covariate the results in T1 measure (pre intervention). After adjusting for T1 measurement, results revealed no significant differences between experimental and control groups in any of the observed variables at T2 [empowering ($F_{1,13} = .831, p = .379$), disempowering ($F_{1,13} = .516, p = .485$), autonomy support ($F_{1,13} = .292, p = .598$), controlling ($F_{1,13} = 1.032, p = .328$), task-involving ($F_{1,13} = .025, p = .876$), ego-involving ($F_{1,13} = .036, p = .852$), relatedness support ($F_{1,13} = .014, p = .909$), relatedness thwarting ($F_{1,13} = .076, p = .787$) and structure ($F_{1,13} = .65, p = .802$).

It is important to mention here that in line with instructions provided at the webinars, experimental group PE teachers increased their rates on autonomy support, task-involving, relatedness support, structure, empowering behaviors and decreased their rates on controlling, ego-involving and disempowering behaviors at T2 measure (post-intervention; Table 7.1), but these changes were not statistically significant ($p > .05$). Given the small number of teachers in experimental groups, a deviation to the opposite direction from just one or two of these teachers result to nonsignificant findings. This is expectable because as was shown in Chapter 5 not all teachers followed the instructions provided in the webinars.

Table 7.1. Descriptive statistics between T1 and T2 observed PE teachers' behaviors

Observed Variables	T1 Measure (Pre)		T2 Measure (Post)	
	Experimental Group ($n = 10$)	Control Group ($n = 6$)	Experimental Group ($n = 10$)	Control Group ($n = 6$)
Empowering	1.61 ± .46	1.75 ± .32	1.81 ± .31	1.71 ± .37
Disempowering	.18 ± .24	.50 ± .32	.13 ± .21	.46 ± .33
Autonomy support	1.28 ± .29	1.52 ± .31	1.29 ± .36	1.48 ± .28
Controlling	.53 ± .45	.44 ± .41	.46 ± .58	.23 ± .24
Task-involving	1.78 ± .32	1.68 ± .27	1.88 ± .41	1.80 ± .32
Ego-involving	.13 ± .18	.17 ± .19	.12 ± .11	.15 ± .14
Relatedness support	1.63 ± .34	1.58 ± .25	1.70 ± .33	1.68 ± .26
Relatedness thwarting	.21 ± .30	.14 ± .20	.19 ± .30	.13 ± .19
Structure	2.05 ± .16	2.01 ± .29	2.11 ± .20	2.06 ± .29

Note. Mean scores of the three 10 minute observed segments.