



TEACHERS' SELF-DETERMINED MOTIVATION IN RELATION TO NON-TEACHING WORK TASKS

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Abstract:

The present article reports on two studies (pilot and main) aiming to examine the psychometric properties of two scales assessing (a) teachers' work motivation and (b) their involvement in non-teaching work tasks, and to explore the associations between the two constructs under the theoretical framework of self-determination theory (SDT). A Greek version of Blais' Work Motivation Inventory (BWMI-TGr) was adapted for teachers, and a new instrument measuring teacher behaviour relevant to non-teaching work tasks was developed. Rigorous analyses supported the construct validity and internal consistency of the scales used. The findings suggested that teachers' intrinsic motivation presents the most optimal patterns of relationships with non-teaching work behaviours, such as preparation for teaching, professional training, education-related reading, collaboration with parents, and participation in the school's cultural activities. Identified and introjected regulations exhibited positive relationships only with teacher involvement in cultural activities, whereas external regulation had no positive relationship with non-teaching work tasks. The findings are discussed through the lens of SDT and strategies are proposed for school climate improvements, which target the cultivation of teachers' intrinsic motivation at work.

Keywords: in-service teachers; work motivation; behavioural regulations; extra-role behaviours; instrument validation

1. Introduction

Work is a stressful complex human activity, strongly connected to satisfaction and dissatisfaction, sense of self, survival, and often synonymous with a sense of 'having to'.

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In a highly competitive environment, as found in the work environment, the employees may need a resource of psychological strength to meet the job's demands. This resource, which often plays such a decisive role in our lives, is called motivation. Motivation in the workplace regulates the initiation, direction, intensity, and persistence of employees' behaviours (Maehr & Braskamp, 1986). Since teachers are the most essential link between curriculum and students, their motivation at work must be the subject of the most intensive analysis. Understanding teachers' motivational processes in the educational workplace are crucial to find and illustrate ways of fostering their job-related behaviours at the optimum level. Motivation in the workplace has been thoroughly examined following the organismic theoretical approach which assumes that the human organism is active and having its own volition, and underlines the importance of cognitive processes (e.g., Baard, Deci & Ryan, 2004; Gagné & Deci, 2005).

Cognitive psychologists proposed a dichotomous conception of motivation, that is, the breakdown of motivation to intrinsic and extrinsic, based on a means-end analysis (Deci, 1975). As Deci and Ryan have posited, "*intrinsic motivation is the innate, natural propensity to engage one's interests and exercise one's capacities, and in so doing, to seek and to conquer optimal challenges*" (1985, p. 43). Therefore, intrinsically motivated behaviour is 'energized' by itself and aims toward the joy and pleasure caused by its own initiation. Extrinsically motivated behaviours are those that serve as a means to accomplish another end (e.g., reward, punishment avoidance). These two constructs are fundamental in Self-Determination Theory (SDT; Deci & Ryan, 1985), which is a well-established motivational theory, in many different cultures and life domains, and particularly in education (e.g., Reeve, 2002; Reeve, Bolt, & Cai, 1999) and work (e.g., Deci et al. 2001; Gagné & Deci, 2005; Gagné et al. 2010). In fact, adopted behaviours in the absence of external rewards are often used as a measure of intrinsic motivation.

2. Theoretical framework and literature overview

2.1 Self-determination theory (SDT)

Deci and Ryan's (1985) self-determination theory posited that intrinsic motivation is based on the human need for competence, autonomy, and social relatedness (Deci & Ryan, 2000). Competence refers to the need for directing the result of an effort and feeling effective. Autonomy refers to the need for a person to determine his/her own behaviour. Relatedness refers to feelings of connectedness and belongingness with others. The manner in which environmental factors are perceived (nature and structure of rewards, feedback, support) and the effects of these perceptions on the needs for competence, autonomy, and relatedness determines motivation, and results in behaviour 'regulations'. SDT stresses the importance of basic psychological needs satisfaction for competence, autonomy, and relatedness as these are essential to optimal functioning and well-being.

Deci and Ryan (1985) with Organismic integration theory (OIT), a mini (or sub-theory) of SDT, further specified the degrees of internalization of the various types of motivation (Figure 1). This distinction was deemed necessary as different forms of more

or less autonomous or controlled motivation bear discernible consequences. According to OIT, *External regulation* refers to behaviour regulation through external pressures such as rewards and constraints. *Introjected regulation* refers to external reasons that are internalized to a behaviour. Such a behaviour is not considered as truly self-determined as individuals replace the external source of control with an internal one and begin to impose pressure on themselves to make sure they exhibit such behaviours. *Identified regulation* is displayed when a behaviour is highly valued and judged as important for the individual and it will be voluntarily performed for certain reasons, others than pleasure and satisfaction. *Integrated regulation* also refers to voluntarily activating a behaviour, but in this case, as a function of coherence with other aspects of a person's life in general. Vallerand, Pelletier, Blais, Brière, Sénécal, and Vallières (1992) posited the existence of three types of intrinsic motivation: intrinsic motivation to know, intrinsic motivation towards accomplishments, and intrinsic motivation to experience stimulation, as well as another dimension of motivation called amotivation. Intrinsic motivation to know refers to engaging in an activity for pleasure and satisfaction originating from exploring and learning something new. Intrinsic motivation for accomplishment refers to engaging in an activity for the pleasure and satisfaction that stem from the effort to create, and to achieve. Intrinsic motivation to experience stimulation refers to engaging in an activity to experience pleasant sensations.

They also suggested another dimension of motivation, called amotivation, which is defined as a state of complete lack of intention or energy directed towards action. In other words, "*individuals are not able to perceive a contingency between their behaviour and the subsequent outcomes of their behaviour*" (Deci & Ryan, 1985, p. 31).

The tridimensional conceptualization of intrinsic motivation was adopted as an attempt to measure motivation independently from its determinants and consequences (Vallerand, 1997). Certain criticisms concerning motivation measurement have highlighted the issue of circularity, that is, the use of affective and behavioural variables measuring intrinsic motivation as both an index of motivation and a consequence at the same time (Vallerand, 1997) which is considered problematic. Thus, measuring teachers' intrinsic motivation independently from its consequences allows us to empirically derive conclusions on whether intrinsic motivation will lead to cognitive, affective, and behavioural consequences or not, and not just presume that it automatically does. Furthermore, distinguishing motivation from its consequences will provide us with indications of the degree to which intrinsic and extrinsic motivation have discrete effects on various affective, cognitive and behavioural outcomes (Vallerand, 1997). Blais, Brière, Lachance, Riddle, and Vallerand (1993) used this approach for assessing self-regulation in the domain of work, and some relevant studies exist in the field of teachers' motivation (e.g., Pelletier, Séguin-Lévesque, & Legault, 2002). In educational literature, even though there is an ample body of studies applying the SDT model in relation to students' motivation (see Reeve, 2002), this is not the case regarding teacher motivation. For instance, in Greece's educational settings, to our knowledge, literature regarding in-service teacher self-determined motivation is scarce (Gorozidis & Papaioannou, 2014; Gorozidis, Tzioumakis, Krommidas, & Papaioannou, 2020a). In addition, this recent line

of research has only examined situational level (i.e., task-specific) motivation of in-service teachers (Gorozidis & Papaioannou, 2016; Gorozidis et al., 2020b).

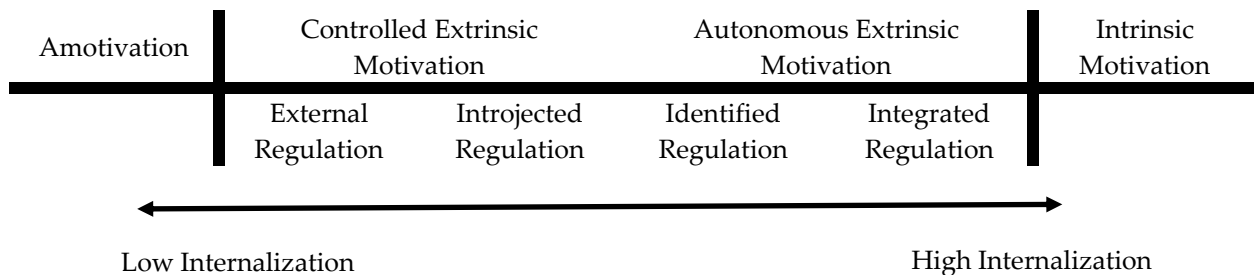


Figure 1: The Self-determination internalization continuum
 (adapted from Ryan & Moller, 2017, p. 216)

2.2 SDT and teaching profession

In the last decade, following suggestions that education professionals suffer from a severe lack of motivation (Jesus & Lens, 2005) the international literature focused particularly on teacher self-determination in work. This line of research is growing rapidly, yielding evidence that the SDT framework may provide valuable insights into teacher motivational processes. Fernet, Guay, and Senécal (2004) found that professors' self-determination at work was connected positively with personal accomplishment and job control, and negatively with emotional exhaustion, depersonalization, and job demands. In a similar vein, Roth, Assor, Kanat-Maymon, and Kaplan (2007) studied elementary school teachers in Israel and found that the higher their self-determination for teaching, the higher their sense of personal accomplishment and the lower their emotional exhaustion. Similarly, negative relationships emerged between teachers' self-determined types of motivation (i.e., intrinsic, identified) and their burnout (i.e., emotional exhaustion, depersonalization, reduced personal accomplishment) in primary and secondary schools in Canada (Fernet, Senécal, Guay, Marsh, & Dowson, 2008; Fernet, Guay, Senécal, & Austin, 2012).

Moreover, teacher self-determined motivation was found to be associated with higher self-efficacy (Fernet et al. 2012), positive attitudes to innovative teaching (Lam et al. 2010), student engagement in the classroom (Demir, 2011), greater use of student-centred methods (Hein et al., 2012) and motivational strategies toward students (i.e., instrumental help and support, meaningful rationale, gaining understanding) (Taylor, Ntoumanis, & Standage, 2008). Additionally, recent studies indicate that in-service teachers with higher levels of self-determined motivation (i.e., intrinsic and identified regulations) are more engaged with professional learning activities (Gorozidis & Papaioannou, 2014; Jansen in de Wal, den Brok, Hooijer, Martens, & van den Beemt, 2014). All these findings suggest that teachers' self-determined work motivation is worth of thorough examination because it is affecting their job-related behaviour, well-being and their student achievement.

Although SDT based instruments measuring teachers' self-determination in work are well established in other languages as French (Fernet et., al, 2004; Pelletier, et. al, 2002) and English (Taylor, Ntoumanis, & Standage, 2008), in Greek language currently there is a lack of measurements on teachers' work domain motivation. To our concern the only available instrument for teachers, which has been validated in Greek is the Work Task Motivation Scale for Teachers (WTMST; Fernet *et al.* 2008; Gorozidis & Papaioannou, 2014; 2016) which measures task specific (i.e., situational level) motivations of teachers.

2.3 Teacher behaviour: Non-teaching work tasks

According to SDT postulates and relevant research mentioned above, teachers' self-determination at work is expected to be associated with professional behaviours that are not prescribed as formal duties and depend on individuals' volition to get involved with and perform them properly. The examination of teacher motivation in relation to this kind of work behaviours becomes especially important under the absence of incentives. For instance, Greek educational system lacks the implementation of an accountability system for teacher work, and employees' involvement with non-teaching roles is not regularly evaluated, formally rewarded or penalized. This means that the quality of their involvement with these roles depends merely on their voluntary engagement. However, in current reality (continuous economic recess, budget and salaries cuts, school resources reduction), in order schools to function properly, besides teaching, it is necessary teachers to get involved with a great amount of non-teaching work tasks (e.g., administrative clerical tasks). These activities are part of teacher's everyday routine at school and at home beyond 'working hours', and are directed towards improving performance in school (Van Dyne, Cummings, & McLean Parks, 1995). In literature the term can be found as extra-role or organizational citizenship behaviours (Organ, 1990) and researchers based on empirical evidence underscore the importance of these behaviours for school effectiveness and the achievement of contemporary educational objectives (DiPaola & Hoy, 2005; Jimmieson, Hannam, & Yeo, 2010; Oplatka, 2009; Somech & Drach-Zahavy, 2000; Vigoda-Gadot, Beerli, Birman-Shemesh, & Somech, 2007). Such behaviours may include (but are not limited to) teacher preparation for teaching, education-related reading, collaboration with parents, participating in personnel training, participating in school's administrative tasks, cultural activities, school projects etc.

For reasons of simplicity, here we do not adopt terms as teacher extra-role or organizational citizenship behaviours due to the lack of consensus among scholars on their conceptualization and dimensionality (e.g., Neves, Paixão, Alarcão, & Gomes, 2014), and the vagueness on distinction between in-role and extra-role behaviours relevant to teaching profession (e.g., Belogolovsky & Somech, 2010). Above that, scholars point out that the taxonomy/categorization of these professional behaviours depends on various factors such as the situation, the context, the culture or the specific moment (e.g., Oplatka, 2006; Neves, Paixão, Alarcão, & Gomes, 2014; Van Dyne, Cummings & McLean Parks, 1995), creating uncertainties on the definitional clarity of these terms across different studies. To avoid this confusion, here we utilize the term *non-teaching work tasks*

to describe a spectrum of activities complementary to the task of teaching and relative to the school-life in general.

While the construction of another organizational citizenship behaviour instrument for school environment is beyond the scope of the present study, the measurement of teacher involvement with non-teaching activities in the present article serve as a manifestation of teachers' behavioural outcomes that might relate to their self-determined motivation at work. Furthermore, to our knowledge there is a gap in research investigating in-service teacher work motivation in relation to their engagement with non-teaching work tasks.

2.4 Research question, purposes & hypotheses

The basic research question guiding the present research was: What kind/form of teacher motivation is significantly connected with teacher non-teaching behaviours at work/school? To explore this question, the utilization of the appropriate valid and reliable measures was necessary. Thus, the purpose of the present research was to evaluate the psychometric properties of (a) an SDT-based instrument assessing teachers' self-determined work motivation (Greek adaptation of Blais' Work Motivation Inventory, BWMI; Blais et al., 1993), and (b) a newly developed instrument measuring non-teaching work task behaviours, in order to examine the associations between the two constructs. The examination of these associations through SDT lens in the specific context and situation, served also as an indication of instruments' external validity. Based on the purposes and research question, the following hypotheses were formulated:

Hypothesis 1: (a) The Greek adaptation of the BWMI for Teachers will present acceptable psychometric properties (e.g., internal consistency, construct validity). (b) Teachers' responses to (BWMI-TGr) will be in accordance with SDT motivational regulations continuum, as proposed by Vallerand et al. (1992; 1997).

Hypothesis 2: The newly developed instrument assessing teacher involvement in non-teaching work tasks (TNTWTQ) will present acceptable psychometric properties (e.g., internal consistency, factor structure).

Hypothesis 3: In accordance with SDT and teacher related research presented above, it was assumed that teacher involvement in non-teaching work tasks would be positively associated with intrinsic motivation but not in optimal level with less self-determined forms of motivation, such as amotivation, external regulation and introjected regulation. However, this hypothesis was more exploratory in nature, due to the lack of past empirical evidence regarding these associations.

3. Material and Methods

3.1 Pilot study

The main purpose of the pilot study was the examination of the psychometric properties of the Greek version of the Work Motivation Inventory of Blais, et al. (1993) adapted for teaching (BWMI-TGr). A second goal was the development of an instrument measuring teachers' engagement with non-teaching work tasks.

3.1.1 Procedure

Prior to conducting the present research study, the researchers obtained the scale and the permission from the original authors to translate the instrument into Greek, and modify the original items. After the procedure of back translation, the BWMI-TGr was submitted to field experts for further improvement. An expert panel of two researchers with expertise in work motivation proposed items rewordings in order to meet the contextual cultural differences between the two languages. The TNTWTQ factors and items were refined using comments and feedback from five secondary school teachers and two educational experts, all with very good knowledge of the theories underpinning the instrument. Following a convenient sampling procedure, approximately 230 questionnaires were distributed to physical education teachers located to the northern part of Greece (mostly at the metropolitan area of Thessalonica). The participants voluntarily responded to anonymous questionnaires following researcher's instructions. The response rate on this survey was about 80%.

3.1.2. Participants

One hundred and eighty-three teachers (Physical Education teachers [n=78], Mathematics teachers [n=64], foreign languages teachers [n=12] and elementary school teachers [n=23]) participated in the pilot study (did not report their specialization n=6). All participants at the time of the study were working in public schools, in different parts of Northern Greece and Athens. The participants were working in elementary schools (grades 1-6, n = 76), junior high schools (grades 7-9, n = 65), senior high schools (grades 10-12, n = 33) and nine did not report their specialization, 76 of them were males (42%), 104 females (58 %) and three did not state gender.

3.1.3. Measures

3.1.3.1. Blais' Work Motivation Inventory adaptation for Teaching – Greek version (BWMI-TGr)

The questionnaire used to assess teachers' work motivation was the Blais' 'Work Motivation Inventory' (Blais, *et al.*, 1993). Furthermore, four items from the Academic Motivation Scale (AMS; Vallerand, Pelletier, Blais, Brière, Sénécal and Vallières, 1992) were added in order to assess motivation independently from its determinants and consequences, which is an approach that focuses in the underlying reasons that drive behaviour (McClelland, 1985). By adopting such an approach, the measure reflects the conceptual definition of motivation that is, the perceived reasons that drive people to engage in certain activities, as well as "*tying this operational definition of motivation to its determinants and consequences without the problems of circularity*" (Vallerand, 1997, p. 284). Therefore, the modified scale consisted of 31 items that corresponded to seven subscales. It is noted that intrinsic motivation (IM) factor in this scale reflected the multidimensionality of IM adopted by Vallerand et al. (1992). The participants answering to the question 'Why are you doing this job;' marked their answers on a seven-point scale (1= it does not correspond at all, 7 = it corresponds exactly) to indicate the degree of agreement of their views with the item content. The participants answered questions

corresponding to the instrument's factors as follows: Intrinsic motivation 'For the moments of joy that this job brings me' (stimulation), 'For I often learn interesting things doing this job' (knowledge), 'Because of the sense of achievement I experience while doing my job in a personal and unique way' (accomplishments), identified regulation 'Because it's the job that I have chosen and that I prefer in order to attain a certain standard of living', introjected regulation 'Because I personally feel that I really ought to be good at this job and I would be very disappointed otherwise', external regulation 'For the paycheque', and amotivation 'I don't know, I just can't manage to do the important tasks of this work well'.

3.1.3.2. Teacher Non-Teaching Work Tasks Questionnaire (TNTWTQ)

For the purpose of the present study, a new instrument was developed to assess teacher engagement in non-teaching work tasks. The instrument consisted of 24 items corresponding to 6 factors reflecting voluntarily activated behaviours (School's administrative task, Professional training, Collaboration with parents, Participation in cultural activities, Reading, and Projects and technology use). To ensure teachers' voluntary engagement in these tasks, it was clearly explained that all answers in this questionnaire represent only teacher-initiated behaviours and not duties assigned on behalf of the school administration-principal. For all items responses were given in 6-point scales (from 0 to 5) assessing the number of times of participation in non-teaching work activities. Item selection and construction, scales' intervals, minimum and maximum values were defined by prior consultation of experts and teachers with experiences in non-teaching work tasks in Greek schools (for sample items see Table 2). It should be noted that in Greek educational system administrative and clerical tasks are carried out by teaching staff and not by specialized administrative personnel.

3.1.4. Statistical analyses

The software used for data analyses were SPSS and AMOS v. 22. The factorial validity of the BWMI-TGr was examined through Confirmatory Factor Analysis (CFA). The factorial validity of the TNTWTQ was examined through Exploratory Factor Analysis (EFA). To investigate internal consistencies of the scales Cronbach's alpha indices were calculated. For the examination of the linear relationships between the variables, Pearson correlation coefficient was computed. Standardized z scores were calculated for the "Teachers' non-teaching work tasks" because data were based on different units of measurement (behaviour frequency per weeks, months, years).

3.1.5. Pilot study results

3.1.5.1. BWMI-TGr

A seven-factor model with correlated factors was created in line with Blais' at al. (1993) suggestions and CFA was conducted on the responses to 31 items. Analysis revealed that the instrument's factorial structure had to be further examined in order to meet the proposed structure ($\chi^2 = 998$, $df = 465$, $\chi^2 / df = 2.15$, $TLI = .71$, $CFI = .74$, $SRMR = .032$, $RMSEA = .082$, 90% CI [.032-.067]). On the other hand, internal consistency was

satisfactory since for all scales the alpha coefficients were higher than .68 except for introjection ($\alpha=.60$) (see Table 1).

Table 1: Pilot Study Descriptive Statistics and Internal Consistency of the BMWI-TGr (N=183)

	Factors	M	SD	N of Items	Example Item	α
1	Intrinsic motivation to know	5.24	1.47	4	"For I often learn interesting things doing this job"	.82
2	Intrinsic motivation accomplishment	5.39	1.39	4	"Because of the sense of achievement, I experience while doing my job in a personal and unique way"	.76
3	Intrinsic motivation stimulation	5.61	1.37	4	"For the moments of joy that this job brings me"	.80
	Intrinsic motivation (total)	5.40	1.32	12		.80
4	Identified regulation	5.87	1.26	4	"Because it is the type of the work, I prefer with view to pursuing my career"	.68
5	Introjected regulation	5.12	1.72	3	"Because I personally feel that I really ought to be good at this job and I would be very disappointed otherwise"	.60
6	External regulation	4.45	1.59	2	"For the paycheck"	.79
7	Amotivation	3.04	1.87	5	"I don't know, the output/production norms imposed on us are too high"	.78

3.1.5.2. TNTWTQ

An EFA with oblimin rotation was conducted on the responses to the questionnaire. From the analysis six factors emerged with eigenvalue larger than 1, explaining 68.8 % of the total variance. Six items were excluded from the model because their loadings were lower than .40. Scale scores were computed for each of the six factors. For all scales the alpha coefficient was .60 and above, and factor loadings were higher than .53. These findings support the initial construct validity and internal consistency of the instrument (Table 2).

Table 2: Pilot Study Descriptive Statistics and Internal Consistency of the TNTWTQ (N=183)

Factors	M	SD	N of Items	Example Item	α
1. School's administrative task	1.52	1.20	3	"Over the past 5 years, how many times have you been responsible of creating the weekly timetable in your school?"	.65
2. Professional training	2.25	1.12	4	"In how many scientific studies have you participated in (publications, oral presentations, research programs, posters)?"	.71
3. Collaboration with parents	2.47	1.43	3	"Over the past 12 months, how many times have you initiated a meeting with a parent for their children progress at school?"	.79
4. Participation in cultural activities	1.28	.73	2	"Over the past 5 years, how many times have you been responsible of organizing some sort of school events, celebrations ceremonies etc?"	.75

5. Reading	2.36	.99	2	"In general, during past year how much time in average have you dedicated in reading educational books or literature specialized to your area?"	.69
6. Projects and Technology Use	1.39	1.02	4	"Over the past 5 years, how many times have you been responsible of the operation and use of computers in your school?"	.60

3.1.5.3. Correlations

Pearson correlations were computed to examine associations among subscales of the two instruments. Results showed that intrinsic motivation was positively related to reading ($r = .17, p < .05$), identified regulation was positively related to professional training ($r = .17, p < .05$), external regulation was negatively related to collaboration with parents ($r = -.18, p < .05$), and amotivation was negatively related to professional training ($r = -.18, p < .05$) and school's administrative task ($r = -.17, p < .05$) (Table 3).

Table 3: Pilot Study Pearson Correlations Between TNTWTQ and BMWI-TGr Factors

Factors	Intrinsic motivation	Identified regulation	Introjected regulation	External regulation	Amotivation
Reading	.17*	.14	.05	-.13	-.11
Professional training	.12	.17*	.08	-.05	-.18*
Collaboration and communication with parents	.08	.07	.02	-.18*	-.09
School's administrative tasks	.02	.11	.03	-.10	-.17*
Participation in cultural activities	.24	.07	.12	-.07	.01
Projects and technology use	.12	.09	.17	-.02	-.11

* $p < 0.05, N=183$

3.1.6. Discussion of the pilot study

Taking into consideration the preliminary results showing that the Work Motivation Inventory had not the proposed factorial structure, it deemed appropriate that items should be further edited in order to clearly reflect the conceptual framework in the Greek language. For example, the identified regulation item 'Because it is the type of the work I prefer with view to pursuing my career' of the original scale, was adjusted to 'Because it is the type of job I have chosen as it expresses my way of life'. Moreover, the internal amotivation item 'I don't know, the output/production norms imposed on us are too high' was adjusted to 'I don't know, I feel many times helpless in my job'. Additionally, the identified regulation item 'Because it is the job that I chose to work towards fulfilling my career plans' was adjusted to 'Because it is the job I have chosen and I prefer as it helps me to complete as a person'. Finally, the internal amotivation item 'I don't know, many times I wish someone could help me' was added to the scale. All other items used in the modified version of the Work Motivation Inventory, were items of the original Blais' scale (see Table 4).

Table 4: Blais Work Motivation Inventory Adapted for Teaching-Greek Version (BWMI-TGr) (Blais, et al. 1993). Scales, Items and Standardized Beta Weights.
General stem: Why are you doing this job?

Scale	Item	β
Intrinsic motivation to know	Because of the pleasurable experience of learning new things at this job	.83
	Because of the pleasure I experience in broadening my knowledge regarding a number of interesting topics	.86
	Because various aspects of this job stimulate my curiosity	.78
	Because I frequently learn interesting things doing this job	.78
Intrinsic motivation to accomplish	Because of the sense of achievement, I experience while doing my job in a personal and unique way	.66
	For the satisfaction I feel while overcoming the interesting challenges posed by my job	.79
	For the challenge of trying difficult things	.70
	For the pleasure I feel in being creative regarding how I carry out my work	.84
Intrinsic motivation stimulation	For the different positive feelings that I experience working in this job	.85
	Because I have fun doing my job	.73
	For the moments of joy that this job brings me	.83
	For the joy I feel while doing interesting tasks as part of this job	.89
Identified regulation	Because it is the job that I have chosen and that I prefer in order to attain a certain standard of living	.73
	Because I chose this job since it allows me to attain some important goals while at the same time permitting me to respect other aspects of my life as well	.72
	^a Because it is the type of job I have chosen as it expresses my way of life	.87
	^a Because it is the job I have chosen and I prefer as it helps me to complete as a person	.88
Introjected regulation	Because my work is my life and I don't want to fail	.85
	Because I really want to have success in this job and I would be ashamed otherwise	.79
External regulation	For the paycheck	.88
	Because this job provides security	.61
	Because it allows me to make money	.83
Amotivation	I don't know, I am lacking important skills needed to accomplish the tasks required for this job	.91
	I don't know, I have the impression that I do not have what it takes to do this work well	.66
	^b I don't know, many times I wish someone could help me	.83
	^a I don't know, I feel many times helpless in my job	.85
	I don't know, I just can't manage to do the important tasks of this work well	.82

^aModified item. ^bAdded item

Preliminary evidence revealed that construct validity and internal consistency of the TNTWTQ can further improve. Correlation analysis among the factors for both scales provided initial indications of external validity of the behavioural questionnaire. Positive relationships emerged between intrinsic motivation and identified regulation, as well as a negative relationship between amotivation, external regulation and the non-teaching

work tasks. These results were congruent with the conceptual framework of self-determination theory. Although promising, these findings suggested that there was room for enhancement of both instruments. Thus, it was decided that a further item/model improvement and a larger sample of participants could enhance its diagnostic potency.

3.2 Main study

A year after the pilot study, the main study was conducted with the purpose of examining the associations between the constructs and further supporting the psychometric properties of the instruments, by re-administering a modified version of BWMI-TGr and the improved TNTWTQ to a larger and more representative number of teachers.

3.2.1. Procedure

Following the process of improving and adding items to both scales, 1760 questionnaires were distributed to schools located throughout Greece. Participant teachers voluntarily responded to anonymous questionnaire following detailed instructions, and returned it in closed envelopes. A total of 911 questionnaires were returned, representing about 52% response rate. From these, 152 questionnaires included a large number of incomplete responses to the BWMI-TGr. These questionnaires were excluded from further analyses. Hence, the CFA was conducted on responses to this measure on a sample of 759 participants. From these, 309 had not responded to the TNTWTQ, and another twenty of them were further rejected due to excessive amount of missing data, thus resulting in 430 complete TNTWTQ questionnaires. Hence, the analyses referring to non-teaching work tasks were conducted with the remaining sample consisting of 430 teachers.

3.2.2. Participants

The participants of the main study were 759 Greek teachers, 364 males (49%), 382 females (51%), while 13 did not indicate gender. Participant teachers were from all over Greece including two large urban areas (Athens and Thessalonica). Seven hundred eighteen of them were working in public schools (94%), 40 were working in private schools (6%), and there was one missing value. Two hundred nineteen were working in elementary schools (30%), 415 in junior high schools (55%), 68 in senior high schools (8%), 49 in both elementary and high school (7%) and eight did not report their school level. Among the participants there were 471 physical education teachers (63%), 98 foreign languages teachers (13%), 96 elementary school teachers (12%), 52 math teachers (7%), 34 of other specializations (5%), and eight of the participants did not indicate their specialization.

3.2.3. Measures

3.2.3.1. BWMI-TGr

Due to the poor results of the CFA in pilot study, the WMI (Blais, et al. 1993) was submitted to two field experts for improving its conceptual understanding. The twenty items with the highest loadings from the original scale were selected to form the basis for the BWMI-TGr. Ten more items were slightly modified for contextual clarification, and furthermore, for the tridimensional conceptualization of intrinsic motivation, we clearly

classified the IM items into distinct factors, adopting Vallerand's approach (1992; 1997). Finally, five new items were added for the assessment of amotivation. Thus, the revised instrument consisted of 35 items (intrinsic motivation to know, four items; intrinsic motivation towards accomplishments, four items; intrinsic motivation to experience stimulation, four items; identified regulation, four items; introjected regulation, three items; external regulation, six items; and amotivation, 10 items). All items corresponded to the seven subscales used in the pilot study of the original WMI (see Table 4 for the final instrument).

3.2.3.2. TNTWTQ

Based on the scale that resulted from the pilot study and adding 4 new items for the assessment of teachers' preparation for teaching, the final form of the TNTWTQ consisted of seven subscales, a total of 22 items: 'preparation for teaching' (4 items) 'school administrative task (3 items), professional training (4 items), collaboration with parents (3 items), reading (2 items), projects and technology use (4 items), and participation in cultural activities (2 items) (see Table 5 for the final instrument).

3.2.4. Statistical analyses

In the main study all analyses were conducted following the same procedures described in the pilot study. The only exception was the evaluation of the TNTWTQ factorial validity which was examined through CFA at this stage.

Table 5: Teachers' Non-Teaching Work Tasks Questionnaire (TNTWTQ). Items and Standardized Beta Weights

Scale	Items	β
School's administrative task		
	Over the past 5 years, how many times have you been responsible of creating the weekly timetable in your school?	.71
	Over the past 5 years, how many times have you been responsible of calculating the statistics of your school?	.75
Participation in cultural activities		
	Over the past 5 years, how many times have you been responsible of your school cultural initiatives (theatrical group, dance group, music group)?	.82
	Over the past 5 years, how many times have you been responsible of organizing some sort of school events, celebrations ceremonies etc.?	.83
Reading		
	How many books (educational literature) relevant to education or your specialization have you read over the past year?	.65
	In general, during the past year, how much time in average have you dedicated in reading educational books or literature specialized to your area?	.91
Professional training		
	Over the last 3 years, how many information days (sessions, meetings) – conferences relevant to your specialization have you attended?	.91
	Over the last 3 years, how many seminars-workshops have you attended?	.81

	How many scientific congresses relevant to your specialization have you attended?	.65
	In how many scientific studies have you participated in (publications, oral presentations, research programs, posters)?	.77
Collaboration with parents		
	Over the past 5 years, how many times have you organized parent meetings?	.96
	Over the past 12 months, how many times have you organized parent meetings?	.93
	Over the past 12 months, how many times have you initiated a meeting with a parent for their children progress at school? (CO-PAR)	.67
Preparation for teaching		
	Over the past week, how many hours have you dedicated to your teaching preparation?	.86
	In total, how many hours have you dedicated over the past week for issues concerning your teaching (planning, tasks assessment, studying, etc.)	.87
	Over the past month, how many hours have you dedicated to your teaching preparation?	.92
	In total, how many hours have you dedicated over the past month for issues concerning your teaching (planning, tasks assessment, studying, etc.)	.92

3.2.5. Results

3.2.5.1. Factor analysis BMWI-TGr

In the seven factor model the four factors from the original WMI model were retained (external regulation, introjected regulation, identified regulation, and amotivation), but the factor intrinsic motivation was split in three separate factors according to Vallerand and colleagues (1992) suggestions on the multidimensionality of intrinsic motivation (intrinsic motivation to know, intrinsic motivation toward accomplishments, and intrinsic motivation to experience stimulation). The findings resulting from the examination of the standardized factor loadings for BMWI-TGr indicated that loadings for all seven factors ranged from .26 to .89 (nine items had loadings < .50). Therefore, the 35 items were reduced to 26 due to low loadings. The final seven factor model consisted of 26 items (intrinsic motivation to know, four items; intrinsic motivation toward accomplishments, four items; intrinsic motivation to experience stimulation, four items; identified regulation, four items; introjected regulation, two items; external regulation, three items; and amotivation, five items). Table 4 provides a detailed description of the BMWI-TGr 26 items translated in English and standardized loadings which were above .61.

This seven-factor model had an acceptable factor structure: $\chi^2 = 1155.40$, $df = 274$, $\chi^2/df = 4.21$, $TLI = .93$, $CFI = .94$, $SRMR = .047$, $RMSEA = .065$ (90% CI [.061-.069]). Internal consistency was satisfactory as alpha coefficient for all factors was between .78 and .92. Scale scores were computed for each of the seven factors (Table 6). Moreover, the average score of the three intrinsic motivation scales was also computed (total intrinsic motivation scale) (Table 6).

3.2.5.2. Factor analysis TNTWTQ

We used confirmatory factor analytic technique (CFA) to examine the goodness-of-fit indices for the seven-factor model with uncorrelated residuals but correlated factors suggested that the data fit well to this model: $\chi^2 = 327.98$, $df = 146$, $\chi^2 / df = 2.42$, $TLI = .95$, $CFI = .96$, $SRMR = .053$, $RMSEA = .054$, $90\% CI [.046-.062]$). Moreover, standardized loadings were above .62 (Table 5). Alpha coefficient of the scales was acceptable, ranging from .67 to .94 (Table 6), and only the scale 'projects and technology use' presented relatively low alpha at .58. Scale scores were computed for each of the seven factors. Although our data fitted well to the model, it was deemed appropriate to remove the 'Projects and technology use' factor due to low internal consistency. Therefore, a CFA was conducted to test the suitability of the six-factor solution. Goodness-of-fit indices for the six-factor model with uncorrelated residuals but correlated factors suggested that the data fit well to this model: $\chi^2 = 130.49$, $df = 104$, $\chi^2 / df = 1.25$, $TLI = .96$, $CFI = .97$, $SRMR = .051$, $RMSEA = .049$, $90\% CI [.011-.070]$. Scale scores were computed for each of the six factors (Table 6).

Table 6: Main Study Descriptive Statistics and Internal Consistency of the scales

	Factors	<i>M</i>	<i>SD</i>	α
BMWI-TGr (N=759)				
-	Intrinsic motivation (total)	5.10	1.13	.95
1	Intrinsic motivation to know	4.90	1.25	.88
2	Intrinsic motivation accomplishment	5.12	1.19	.81
3	Intrinsic motivation stimulation	5.23	1.27	.88
4	Identified regulation	5.52	1.26	.87
5	Introjected regulation	4.69	1.54	.78
6	External regulation	4.09	1.52	.79
7	Amotivation	1.97	1.60	.87
TNTWTQ (N=430)				
1	Preparation for teaching	3.41	1.08	.94
2	School's administrative task	1.60	1.04	.67
3	Professional training	2.67	1.13	.75
4	Collaboration with parents	2.84	1.35	.84
5	Participation in cultural activities	2.73	1.52	.80
6	Reading	2.43	.90	.74

3.2.5.3. Correlations

From the examination of the correlations between the BMWI-TGr factors, a strong positive relationship between all three intrinsic motivation type scales emerged (see Table 7). Moreover, all three intrinsic motivation type scales correlated positively with identified regulation and introjected regulation, but no relationship was found between external regulation and amotivation. The patterns of relationships between each of the three intrinsic motivation subscales with other variables were similar. Likewise, there were no differences between the three intrinsic motivation subscales with all the other variables that were examined in this study. As for the relationships of the other factors, introjected and identified regulations were positively related, and they both showed a

weak positive relationship with external regulation. Amotivation was negatively related to the most self-determined behaviour regulations, such as intrinsic motivation and identified regulation.

Table 7: Main Study Pearson Correlations Between BWMI-TGr Factors

Factors	1	2	3	4	5	6	7	8
1 Intrinsic motivation (total)	-							
2 IM to know	.91**	-						
3 IM accomplishment	.93**	.78**	-					
4 IM stimulation	.92**	.74**	.80**	-				
5 Identified regulation	.74**	.60**	.71**	.74**	-			
6 Introjected regulation	.45**	.36**	.43**	.45**	.47**	-		
7 External regulation	.06	.10**	.02	.07	.21**	.20**	-	
8 Amotivation	-.45**	-.32**	-.46**	-.46**	-.57**	-.09*	-.02	-

** $p < .01$

The examination of the relationships between the factors of the two questionnaires revealed significant positive relationships between intrinsic motivation and five out of seven non-teaching work behaviours of teachers. Identified and introjected regulations had positive relationship only with teachers' participation in schools' cultural activities. On the other hand, external regulation had a significant negative correlation with teachers' reading and collaboration with parents, while amotivation presented a negative linkage with teacher involvement in reading and preparation for teaching (see Table 8).

Table 8: Main Study Pearson Correlations Between TNTWTQ and BWMI-TGr Factors

Factors	Intrinsic motivation	Identified regulation	Introjected regulation	External regulation	Amotivation
Reading	.18**	.08	.06	-.15**	-.14**
Professional training	.19**	.03	.03	-.10	-.06
Collaboration and communication with parents	.17**	-.02	.07	-.14**	-.01
Preparation for teaching	.23**	.09	.08	-.10	-.12*
School's administrative tasks	.07	.05	.05	-.04	-.01
Participation in cultural activities	.21**	.15**	.18**	-.02	.01

* $p < 0.05$, ** $p < 0.01$

3.2.6. Discussion of the main study

Taking into consideration that construct validation of an instrument is an ongoing process, the findings of the main study suggested that both instruments have good psychometric properties. Specifically, CFAs goodness of fit indexes and alpha coefficients of the scales supported both instruments' factor structure and internal consistency. In addition, correlation between constructs of the two instruments, provided evidence of external validity of the scales.

4. Discussion

In order to answer the main research question of this study, two instruments were evaluated assessing teacher self-determination at work (domain level) and certain non-teaching work behaviours that teachers engage voluntarily beyond working hours. The examination of work motivation was based in a previous work, done by Blais, et al. (1993), and the present research evidence supports this work. To capture teacher behaviour, TNTWTQ was developed as a self-report measure in a ratio form, and analyses supported instrument's validity and reliability.

The factor analytic results of the BWMI-TGr revealed a seven-factor structure, and satisfactory scale internal consistency supporting Hypothesis 1a. Supporting Hypothesis 1b, teachers' responses to BWMI-TGr were in line with Vallerand et al.'s SDT behavioural regulations conceptualization. The seven factors were intrinsic motivation to know, intrinsic motivation for accomplishment, intrinsic motivation for stimulation, identified regulation, introjected regulation, external regulation, and amotivation. These factors form the self-determination continuum as it is suggested by the SDT (Deci and Ryan, 1985; Ryan & Connell, 1989). From the examination of the relationships among the factors of the scale it was found that intrinsic motivation positively correlated with identified regulation and introjected regulation. Intrinsic motivation did not correlate with external regulation, and negatively correlated with amotivation. These findings supported the internal validity of the scale (H1a), as it was expected that the more self-determined the behaviour is, the higher its positive correlation to intrinsic motivation is and vice versa. The relationships of intrinsic motivation with the rest factors were in line with the self-determination continuum, and therefore they were in congruence with self-determination theory. The rest of the relationships among the scale's factors were also found in the expected direction, although not highly.

Results from EFA, CFA also provided evidence of the TNTWTQ factorial validity and internal consistency supporting Hypothesis 2. The factors extracted were reading, professional training, collaboration with parents, preparation for teaching, school's administrative task, projects, and technology use, and participation in cultural activities. Expectedly, correlational analysis conducted for the examination of the relationships of the self-reported behaviours with the self-determination continuum confirmed Hypothesis 3, since it was generally supported that the more self-determined the teachers were (intrinsic motivation), the more frequently engaged in non-teaching work tasks. Accordingly, the less self-determined the motivation of the teachers was (identified, introjected, external, amotivation), the less frequently they got involved in such activities (Table 8). These findings were consistent with self-determination theory and provided evidence for the instruments' external validity.

5. Implications & Recommendations

Taking into consideration the fact that the Greek educational system does not subsidize or evaluates teachers according to their engagement in non-teaching professional

activities, there is a definite positive (in terms of its motivational consequences) trend towards low levels of extrinsic motivation in adopting such behaviours except for intrinsic reasons. This is considered to be a reasonable and expected outcome, that is, when intrinsically motivated teachers are more interested in the activity, invest more time in preparing themselves for teaching, dedicate more time to meet parents, spend more time, beyond working hours, for personal improvement, and 'spare' extra time to support school by doing routine work or participating in cultural activities. On the other hand, it should not be overlooked that relationships between extrinsic behavioural regulations and these voluntary work activities were far from ideal.

These findings suggest that in order to promote teacher involvement with important work tasks which are crucial for school effectiveness (e.g., DiPaola & Hoy, 2005a), their intrinsic motivation at work should be targeted. According to SDT and empirical research, this can be achieved if the professional environment/climate satisfies the innate needs of employees for autonomy, competence and relatedness at work (Gagné & Deci, 2005). This kind of school climate can be intentionally structured by school principals, administrators and policy makers with the aim to support teacher autonomy, to foster their competence and to promote relatedness among them. Teachers' basic psychological needs can be satisfied in supportive educational environments that permit teachers own configurations at the workplace and participation in decision-making; provide them with opportunities to actively shape their work (e.g., curriculum, material, and methods) and supply schools with all the necessary equipment; provide meaningful rationale and multiple options to self-select the non-teaching work tasks they engage in; emphasize self-improvement, experimentation, cooperation-collaboration, and exchange of ideas between teachers and officials; provide frequent positive feedback and guidance by colleagues, administrators and experts. These SDT based strategies for the formation of the optimal school climate can cultivate teacher intrinsic motivation at work which in turn can contribute in a greater frequency of engagement in non-teaching work behaviours. Indeed, this proposition is in accordance with empirical evidence exhibiting that a positive school climate which is characterized by democratic leadership, professional autonomy, positive collegial interactions and feedback, trust between colleagues, and feelings of belonging is connected with a higher frequency of teacher organizational citizenship behaviours (Christ, Van Dick, Wagner, & Stellmacher, 2003; DiPaola & Hoy, 2005b; DiPaola & Tschannen-Moran, 2001; Oplatka, 2006).

6. Conclusion

Although the correlational nature of this study precludes causal inferences, some notable results emerged; as intrinsically motivated teachers are more likely to engage voluntarily in activities aiming at professional skills improvement and performance enhancement, only intrinsically motivated ones were related to such actions. The more self-determined was a teacher's behaviour, the more they engaged voluntarily in non-teaching work activities. Inarguably, the most adaptive form of motivation is intrinsic motivation. The evidence provided by this study could add to the effective implementation of specific

elements aiming to improve the quality of the work environment. Based in all the above, it could be safely concluded that for a better education system, intrinsically motivated teachers are needed. Thus, teachers' intrinsic motivation promotion should be targeted by policy makers wishing to implement strategies that improve educational systems.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

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