Goal orientations at the global level of generality and in physical education: Their association with self-regulation, affect, beliefs and behaviours

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1   Abstract

2   *Objective*: Life skills programs should ensure that their effects generalize across contexts and

3   activities. Three studies are presented examining the construct validity of an instrument assessing

4   global goal orientations in life in conjunction with a measure of goal orientations in physical

5   education. It was also investigated whether the effects of global goal orientations generalize across

6   contexts.

7   *Method:* Participants were middle school students (N = 351, N = 580 and N = 658) who completed

8   the two goal orientations instruments, measures of self-regulation, affect and beliefs at the global

9   level of generality and specific to the physical education domain and measures of exercise and

10   academic behaviours.

11   *Results:* Multi-sample factor analysis established the factorial validity of the global goal orientations

12   instrument and the distinctiveness of global goals from achievement goals in physical education.

13   Controlling for social desirability effects, the partial correlations of goal orientations in life with

14   global intrinsic-extrinsic motivation, life satisfaction, pleasant and unpleasant affect in life, purposes

15   of life and perceived purposes of physical education, locomotion and assessment, metacognition in

16   physical education, exercise and academic behaviors, were in the expected direction. In general,

17   global goals made a significant contribution to the explanation of variance of global constructs,

18   while achievement goals in physical education made a unique contribution to the explanation of

19   variance of physical education specific constructs.

20   *Discussion:* The results support the construct validity of the instrument assessing global goal

21   orientations in life. They also indicate that global goal orientations are distinct constructs from goal

22   orientations in physical education. The global goal orientations measure can be particularly useful

23   for practitioners teaching interdisciplinary and life skills.

Goal orientations at the global level of generality and in physical education: Their association with

self-regulation, affect, beliefs and behaviours

In recent years an increased interest in teaching life skills and the enhancement of students' and athletes' personal development is noticed (Danish, Fazio, Nellen & Owens, 2002; Gilbert & Trudel, 2000; Goudas, Demirtzaki, Leondari & Danish, 2006; Gould, Collins Lauer & Chung, 2007; Petitpas, Cornelius, Van Raalte & Jones, 2005). The effectiveness of life skills programs is usually assessed with the measurement of self-regulation skills such as positive thinking and goal setting (e.g., Hogan, 2000; Papacharisis, Goudas, Danish & Theodorakis, 2005). Nevertheless, none of these measures captures explicitly the pursuit of a personal development goal in life which is assumed to be affected by these programs. So long as goal pursuit determines the adoption of self-regulation skills (Bandura, 1986; Carver & Scheier, 1998), life skills programs should teach youngsters to pursue personal development across settings and in life in general because this seems to facilitate consistent application of life skills in out-of-sport contexts (Milosis & Papaioannou, 2007).

Carver and Scheier (1998) and others (Cropanzano, James & Citera, 1993; Powers, 1973; Vallacher & Wegner, 1987) suggested that goals are assumed to differ in level of abstraction. Concrete goals in particular domains are aggregated to constitute more abstract higher-order goals. At the highest level are highly valued goals, such as the pursuit of the idealized self (Burke, 1991; Higgins 1996), the expected, hoped-for self or disliked possible self (Markus & Nurius, 1986) and the undesired self (Ogilvie, 1987). Hierarchical models have been also adopted to understand psychological constructs that are linked with goal pursuit, such as self-concept which is defined as general and specific across different actions and contexts (Shavelson, Hubner & Stanton, 1976). Self-determined motivation (i.e., regulation of behaviours by choice and pleasure) is also assumed to differ in levels of abstraction (Vallerand, 1997). In specific contexts such as sport, intrinsically motivated individuals participate due to feelings of interest and enjoyment that are inherent in the activity, extrinsically motivated individuals participate in order to gain extrinsic rewards, status, etc., while some individuals can be even amotivated, acting without purpose with respect to the adopted activity. Vallerand (1997) introduced the concept of global intrinsic-extrinsic motivation and amotivation,

suggesting that across contexts individuals can be predominantly intrinsically motivated, or extrinsically motivated, or even amotivated.

Today there is no research examining goal pursuit in relation to self-determined motivation at the global level of generality. More generally, while Carver and Scheier (1998) described how low-order goals are activated when an input is evaluated with regard to highest level reference values (goals are treated as equivalent to reference values in this theory) and what are the consequences for behaviour, cognition and affect (Carver, 2004), there is no research on the likely divergent outcomes when self-referenced or normative reference values at the highest level are adopted. Notwithstanding the theoretical interest on the association of self-referenced and normative reference values with cognition, affect, behavior and self-determined motivation (Elliot & Church, 1997; Nicholls, 1989), these associations have not been examined at the global level of generality. This lack of research might obscure the wider effects of practices in particular social settings on goal adoption and corresponding self-regulatory processes in life in general. Research at the global level of generality might increase our awareness about the usually unstudied, and therefore, hidden effects of goal orientations beyond the limits of a particular context. Moreover, research on global goal orientations might be useful for programs adopting a holistic approach, such as the life skills programs in physical education where the adoption of self-referenced and normative reference values is equally likely to happen, because this research can increase our understanding about the potential sustainability and transferability of programs' effects across various life settings.

The present studies focus on the self-regulation of behaviour and affect at the global level of generality when an input is judged in terms of self-referenced and normative reference values at the highest level of abstraction. This qualitative difference in reference values to evaluate progress towards attaining a global goal or progress towards moving away from a global goal (Carver & Scheier, 1998) has different motivational repercussions in life. With regard to the approach motivational system resulting from evaluating progress towards goal attainment (Carver & Scheier, 1998), at the highest level of abstraction, self-referenced or normative reference values correspond to two global goal orientations emphasizing the motivational importance of different meaning of expected self, progress towards the expected, and success in life[1] (Papaioannou, 2001; 2006). When

individuals adopt self-referenced criteria to construe the expected self, progress towards the expected self and success in life, they envisage personal accomplishments as controllable, self-determined and intrinsically valued, trying to develop their qualities across different life sectors. When one's expected self, progress and success in life is normatively defined, individuals envisage personal accomplishments as relatively uncontrollable and controlling and they try to establish superiority across life settings. This approach is a generalization across life settings of theoretical tenets embedded in Achievement Goals Theory (AGT) emphasizing the motivational importance of the meaning of success (Nicholls, 1989)[1].

According to AGT, self-referenced judgments of achievement and subjective criteria of success induce task-involving (Nicholls, 1989) or mastery (Ames, 1992; Elliot & Church, 1997) goals aimed at mastering challenging tasks and improving competence. When success is normatively defined people adopt ego-involving (Nicholls, 1989) or performance goals (Elliot & Church, 1997) trying to overcome others. More recently ego goals were split into approach and avoidance (Elliot & Harackiewicz, 1996; Elliot & Church, 1997) indicating pursuit of positive judgment of one's competence and attempts to avoid negative evaluation of one's competence respectively. At the global level of generality, this different motivational process occurs from the adoption of normative-referenced values when an input is evaluated either against progress towards attaining a global goal, which is the expected self, or against progress towards moving away from a global goal, which is the undesired or disliked possible self (Carver & Scheier, 1998). Accordingly, a global ego-enhancing[2] goal in life defines pursuits to enhance self-worth by gaining positive evaluations from others and a global ego-protection goal defines concerns and attempts to protect self-worth by avoiding negative evaluation from others. Based on the tradition of Nicholls and his predecessors (e.g., Klein & Schoenfeld, 1941) the terms ego and personal improvement are used for the two classes of goals to define the valence of goals at the higher-order level of abstraction.

The conceptualization of goal orientations at the global level of generality is based on the observation that life is an achievement context in which individuals are engaged in goal pursuits in all areas of their lives. There is some evidence that this qualitative difference in reference values in evaluating progress towards attaining a global goal or progress towards moving away from a global

goal results to important differences in self-regulation of action and affect across contexts. Ewart and colleagues revealed three profiles of adolescents in the social domain: (a) an agonistic profile, defined as an interpersonal struggle that pits one's personal needs, desires, or tendencies against those of others, (b) a self-development profile, defined as a struggle to rise above or to move beyond one's personal state or condition, (c) an unexpressive-avoidant profile (Ewart, Jorgensen, Suchday, Chen & Matthews, 2002). Group comparisons revealed that adolescents with the agonistic profile displayed diminished social competence, negative social impact, heightened cardiovascular responding during a stress interview and elevated ambulatory blood pressure (Ewart & Jorgensen, 2004). Baumeister, Bushman, and Campbell (2000) suggested that striving to appear superior to others might elevate anxiety, disdain or anger and Leary Tchividjian, and Kraxberger (1994) indicated several hazardous effects of self-presentation motives to people's health. On the other hand, Diener, Suh, Lucas and Smith (1999) suggested that when personal goals are intrinsically valued, potentially attainable and compatible with one's other goals may protect against stress and promote well-being.

The present definition of goal orientations at the global level of generality and its distinction from goal orientations in particular achievement settings provides the framework for the assessment of goal orientations at both global and contextual levels of generality. Three studies are reported here investigating the factorial, convergent, discriminant and predictive validity of a global goal orientations measure. Theoretical assumptions about the association of global goal orientations with self-regulation, affect and beliefs are presented below. These assumptions were concurrently examined at the global level of generality and in the physical education context. This research design is necessary to establish that the global goals measure explains additional variance of cognitions and affects at the global level of generality than the measure which was specific to the physical education domain. From a practitioner's point of view, this evidence is crucial for instruments assessing the effects of life skills programs on global goal orientations and their antecedents at the global level of generality, because it attests that the effects of these programs have the potential to extend beyond the physical activity domain, to generalize across contexts and activities and maybe to sustain over a long period of time. Certainly, context-specific goal orientations measures are expected to share a lot of common variance with global goal orientations measures. As Vallerand and colleagues revealed,

contextual motivation is likely to influence and to be affected by motivation at the global level of generality (Guay, Mageau & Vallerand, 2003). Hence, when global and contextual goal orientations are concurrently used as predictors of cognitions and affects at the global level of generality, global goal orientations should explain additional variance than that which was already explained by contextual goal orientations, but typically the magnitude of this additional variance is not expected to be high.

Initial analyses across Studies 1, 2 and 3: Cross-validation aimed at establishing factorial validity for the global goal orientations measure

The present global measure was assumed to capture three distinct global goal orientations in life, personal improvement, ego-enhancing and ego-protection. Multi-sample confirmatory factor analysis across participants' responses in three studies was used, investigating whether findings supporting the factor structure of this measure generalize for the adolescent population (Joreskog, 1971). A measure of achievement goals in physical education was also used in these studies. This permitted the investigation of the distinctiveness of global goal orientations from achievement goals in physical education. Accordingly, it was expected that multi-sample factor analytic results would establish that (a) global goal orientations in life are distinct constructs from goal orientations in physical education, and (b) global goal orientations generalize across populations of adolescents of varying age.

In the same analysis, the internal convergent-divergent validity for the global goal orientations was also examined. Positive relationship was expected between ego-enhancing and ego-protection factors because these two goal orientations are shaped based on the adoption of normative reference values. No meaningful relationship was expected between personal improvement and ego goal orientations. As is explained further down, the adoption of personal improvement and ego goal orientations have entirely different consequences.

Cross-validation across Studies 1, 2 and 3: Method

Participants

Table 1 portrays participants in three studies that were conducted at different times. All of them participated in coeducational physical education classes of randomly selected schools located in a

large metropolitan city of Northern Greece. Students completed two measures of goal orientations (in

physical education and in life in general) and other instruments that are described further down. They

completed individually the anonymous questionnaires, sitting quietly in their classes in the present of

a researcher who provided privately explanations to each student when it was needed. Informed

consent was required by all participants. The studies were also conducted with the permission of the

Greek ministry of Education and the school authorities.

Measures

   Global goal orientations. In all studies an instrument of global goal orientations was

administered (Papaioannou, 2001; 2006). Briefly, the instrument was developed after a series of pilot

studies in which an item pool was developed, tested (via both exploratory and confirmatory factor

analyses), and revised accordingly (see Carver & White, 1994 and Elliot & Church, 1997, for similar

scale development procedure). The measure of global goal orientations in life consisted of 15 items

shown in the Appendix, 5 items per goal. Following the stem "Generally in my life" adolescents

responded to 5 items assessing personal improvement, 5 items capturing ego-enhancing, and 5 items

assessing ego-protection. Responses were indicated on a 5-point Likert-type scale (1 = *strongly*

disagree, 5 = *strongly agree*). It should be noted that the instrument of Papaioannou (2001; 2006) has

an additional subscale assessing global social approval. This subscale was also administered to the

students of the three studies, and although the findings concerning social approval are worthy to

publish, they are not reported here because they would unduly increase the complexity and length of

this article. Moreover, the original version of the global goal orientations measure includes 6 items per

scale (Papaioannou, 2001; 2006). Nevertheless, following a substantial number of unpublished

studies, we decided to drop one item from each subscale in order to improve the factorial validity of

this tool. The present list with items appears in the Appendix.

   Achievement goals in physical education. Following the stem "In physical education…"

responses were given for 6 mastery items (e.g., "my goal is to continuously develop my skills"), 6

performance approach items (e.g., "I feel absolutely successful when I'm the only one who can make

it in skills and games") and 6 performance avoidance items (e.g., "I often worry that if I try to perform

a routine I might look incapable") on a 5-point Likert type scale (5 = *absolutely agree,* 1 = *absolutely*

disagree). The items and procedures establishing the construct validity for this measure is described in Papaioannou, Kosmidou, Tsigilis and Milosis, (2007) and Papaioannou, Tsigilis, Kosmidou & Milosis (2007).

Model testing

Using AMOS 5 statistical software (Arbuckle, 2003), cross-validation across the three groups was conducted to investigate whether the global goal orientations in life questionnaire maintains its meaning across groups. Initially, multi-sample factor analysis on the responses of participants in the three studies investigated the 3-factor form of the model containing the 15 global goals items. Then, cross-validation was performed for the 6-factor model that was constructed by the 3 global goals and the 3 achievement goals. To investigate discriminant validity, an alternative 3-factor model was built, in which the global goal items and the matching achievement goal items loaded on the same factor (i.e., factor 1: personal improvement and mastery, factor 2 : ego-enhancing and performance approach, factor 3: ego-protection and performance avoidance). Then cross-validation was performed for this alternative model and the results were contrasted with those stemming from the 6-factor model, in which the global goals were remained separate from the matching achievement goals.

In all CFAs Maximum likelihood estimation was used. For each model apart of the *chi square* the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI) and the Root Mean Square Error of Approximation (RMSEA) was also considered. Hu and Bentler (1999) suggested that for the CFI and the TLI cut-off values of close to .95 and for the RMSEA values close to .06 reflect a good fit between the proposed model and the data. Other researchers warned against the use of a generally accepted criterion while ignoring model complexity, because models with more items and more factors yield smaller values for indices such as the TLI and the CFI (Cheung & Rensvold, 2002). Model comparison was based on Akaike's Information Criterion (AIC; 1987), Browne and Cudeck's (1989) Expected Cross-Validation Index (ECVI) along with a 90% confidence interval, and the recommendation of Cheung and Rensvold (2002) that a CFI difference smaller than or equal to - .010 indicates that the null hypotheses of invariance should not be rejected.

Cross-Validation across Studies 1, 2 and 3: Results

Cross-validation across the three samples for the 3-factor model of global goal orientations in life was performed. In the least restrictive model (Model 1) only the form of the model was invariant and all other parameters were non-constrained. This model provided a critical base for subsequent model comparisons. In Model 2 factor loadings were assumed to be invariant across the three groups. In Model 3 the intercepts were also constrained, with the factor loadings still constrained. To this model the variances and covariances across groups were also constrained (Model 4). Finally, the invariance of error uniqueness (errors) was tested, with factor loadings, intercepts, covariances and variances still constrained (Model 5).

Comparison between models supported the invariance of factor loadings across the three samples (Model 2; Table 2). Moreover, these findings indicate acceptable goodness-of-fit indices for Model 2. All factor loadings were statistically significant ($p < .001$) and standardized beta values were larger than .48. The difference in CFI (Cheung & Rensvold, 2002) between the invariant form model (Model 1) and Models 3, 4 and 5 was larger than .01. These findings do not support the invariance of covariance, variances and uniqueness for the 3-factor model.

The results from Model 2 imply that personal improvement goal was not associated with ego-protection goal ($r = .01$, $p>.05$) or with ego-enhancing goal ($r = .06$, $p>.01$). The two ego goals were positively related with each other ($r = .23$, $p<.001$). These findings are in line with hypotheses and support the internal validity of the global goal orientations measure.

Next the achievement goal variables and factors were added to Model 1, specifying an invariant form of 6-factors suggesting personal improvement, ego-enhancing, ego-protection, mastery, performance approach and performance avoidance, with the rest of the parameters unconstrained (Model 6). The cross validation procedure across the three samples was similar with the one that was followed for the 3-factor model. As shown in Table 2, Model 7 with constrained factor loadings was the most favourable model. The complexity of this model justifies the emerged goodness-of-fit indices (Cheung & Rensvold, 2002). All factor loadings were statistically significant ($p < .001$) and all standardized regression weights were larger than .52. The more restricted models (Models 8, 9 and 10) had worse goodness-of-fit indices than Models 6 and 7.

Model 7 was modified to form alternative models which did not discriminate global goals in life from achievement goals in physical education. First a 3-factor model was constructed with constrained form but unconstrained all other parameters. Factor 1 included both personal improvement and mastery goal items, Factor 2 contained both ego-enhancing and performance approach goal items and in Factor 3 both ego-protection and performance avoidance goal items were freed (Model 11). To this model constrained factor loadings were also added (Model 12). The findings from the multi-sample factor analyses suggest that Models 11 and 12 were significantly worse than Models 6 and 7 (Table 2). These results imply that the 3 global goal constructs are distinct from achievement goals in physical education constructs.

Internal consistencies for global goal orientations

As is shown in Table 1 the scales assessing global goal orientations in life had acceptable levels of internal consistency.

<div align="center">Discussion of findings from initial analyses across Studies 1, 2 and 3</div>

The first step in the construct validation process of the global goal orientations measure was the establishment of factorial validity. Multi-sample confirmatory factor analyses were used which are rigorous tests of the psychometric integrity of a questionnaire (Joreskog, 1971). Typically two samples are used in these analyses. The present inclusion of three samples of adolescents added to the robustness of the present analysis supporting the generalization of the findings for the Greek adolescent population. The results provided strong evidence of a solid factor structure for the three global goal orientations measure. In addition, the three subscales had acceptable levels of internal consistency. Moreover, the findings provided initial support to the argument that the global goal orientations are distinct constructs from goal orientations in the physical education context.

As was expected, a positive association emerged between the two global ego factors supporting the internal convergent validity for this measure. The low magnitude for this positive relationship is congruent with findings stemming from contextual measures of achievement goals (Elliot & Church, 1997; Papaioannou et al., 2007), suggesting that there is nothing common in the two ego goal orientations apart of the normative component that is inherent in these reference values. The relationship of global personal improvement goal with global ego goals was not significant. This is

similar to findings stemming from achievement goals measures at the contextual level of generality (Elliot & Church, 1997), thus, supporting the internal divergent validity of the global measure. The lack of considerable shared variance among the three global goals provides indirect support to the expectation that different cognitions, affects and behaviors should be associated with these goals. The following sections focus on the association of global goal orientations with other constructs at the global level of generality, aimed at establishing external convergent, divergent and predictive validity for the global goal orientations measure.

<center>Study 1: Global goal orientations and satisfaction in life</center>

An eventual purpose of life skills programs is the promotion of well-being. Subjective well-being is a global construct of the evaluation of one's life and can be simply defined as an individual's evaluation of her happiness (Diener, Oishi & Lucas, 2003). The facets of subjective well-being such as positive affect, lack of negative affect, and life satisfaction are relatively independent from each other, but in many cases researchers measure a single aspect of well-being, such as life satisfaction (Diener, et al., 2003). Goal striving is assumed to determine the adoption of self-regulatory strategies and the development of life skills (Carver & Scheier, 1998; Carver, 2004) leading eventually to life satisfaction (Emmons, 1986). Hence, an association should be expected between global goal orientations and life satisfaction. Research in education (Kaplan & Maehr, 1999) and sport (Reinboth & Duda, 2006) indicates that the adoption of a personal improvement goal in these contexts might have positive impact on participants' well-being. Global personal improvement goal orientation was assumed to have positive association with life satisfaction because when subjective criteria are used to define the expected self, goal attainment is perceived as controllable and realistic, and individuals have increased probabilities to monitor progress towards attaining their expected self and feel satisfied with their life. However, the use of normative standards in defining one's expected self has no implications for satisfaction, because goal attainment is relatively uncontrollable and not always possible. Study 1 was conducted to investigate the aforementioned hypotheses and support the external convergent-divergent validity of the global goal orientation measure.

<center>Study 1: Method</center>

Participants (Table 1) completed the measures global goal orientations, achievement goals in physical education and the 8-item life satisfaction scale for adolescents (Grob, Wearing, Little & Wanner, 1996) which was found to be reliable and valid in previous studies in Greece (e.g., Papaioannou 2001; 2006). Following the stem "Generally in life…" responses to the life-satisfaction scale were indicated on a 5-point Likert scale (5 = *strongly agree, 1 = strongly disagree*) and examples of items are "My future looks good" and "whatever happens, I can see the bright side". In this study the alpha reliability for the life satisfaction scale was .72.

<div align="center">Study1: Results and Discussion</div>

Life satisfaction had moderate positive relationship with personal improvement goal ($r = .48$, $p<.001$), low positive association with ego-enhancing goal ($r = .24$, $p<.001$), and no relationship with ego-protection goal ($r = .05$, $p>.05$). These findings are in line with hypotheses except the low positive relationship between ego-enhancing goal and life satisfaction. Notably, the magnitude of the relationship between life satisfaction and ego-enhancing appeared somewhat lower than the relationship between life satisfaction and personal improvement. It might be possible that the adoption of an ego-enhancing goal leads to normative success (Elliot & Church, 1997; Elliot & Harackiewicz, 1996), and eventually to satisfaction. On the other hand, life satisfaction seems to have stronger links with global personal improvement goal orientation because this goal adoption ensures more favourable evaluations of goal attainment than when a global ego-enhancing goal is espoused. We decided, however, to investigate this assumption again using a larger and more representative sample of Greek adolescents before making firm conclusions.

Study 2: Global goal orientations, intrinsic-extrinsic motivation and life satisfaction

Ideally, life skill programs should prepare individuals to adopt high levels of self-determined motivation across contexts and activities. The adoption of self-referenced values to define one's expected self offers high levels of autonomy and perceptions of control, resulting to high self-determined forms of motivation, such as intrinsic motivation, identified and integrated regulation (Deci & Ryan, 1985). On the other hand, the adoption of normative referenced values to define one's expected self limits her autonomy and increases perceptions of pressure, thus, eliciting low self-determined types of motivation, such as external regulation and amotivation. Accordingly, in Study 2

global intrinsic-extrinsic motivation and amotivation and satisfaction in life were the external criteria in the investigation of external convergent-divergent validity for the global goal orientations measure. It was hypothesised that a personal improvement goal in life would be positively linked with high levels of self-determination in life such as global intrinsic motivation, but ego-enhancing and ego-protection goals would be positively connected with low levels of self-determination in life, such as global amotivation and external regulation.

Study 2: Method

Participants (Table 2) completed the measures global goal orientations, achievement goals in physical education, life satisfaction and the global motivation scale (Guay, Blais, Vallerand, Pelletier, (1996). In a previous study in Greece back translation had been used for the global motivation scale, showing initial evidence of external convergent/divergent validity and reliability (Papaioannou, 2001). It was designed to capture three dimensions of intrinsic motivation (to know, toward accomplishment, to experience stimulation), four dimensions of extrinsic motivation (integrated, identified, introjected and external regulation) and amotivation. After the stem "In general, I do things…" individuals indicate the reasons why they do different things by responding to 33 items on 7-point scales (*7 = corresponds completely, 4 = corresponds moderately, 1 = does not correspond accordingly*). In the present study principal components analysis on students' responses to this scale revealed a six-factor factor structure, based on which the following scales were computed: (1) total intrinsic motivation (items examples: "because I like making interesting discoveries", "for the pleasure I feel as I become more and more skilled", "in order to feel pleasant emotions"), (2) integrated regulation (item examples: "because by doing them I am living in line with my deepest principles" and "because they reflect what I value most in life"), (3) identified regulation (item examples: "in order to help myself become the person I aim to be" and "because I choose to invest myself in what is important to me"), (4) introjected regulation (item examples: "because I would beat myself up for not doing them" and "because otherwise I would feel guilty for not doing them"), (5) amotivation (items examples "although I do not see the benefit in what I am doing", "even though I do not have a good reason for doing them"), (6) the subscale external regulation, which was not included in this study however, due

to low internal consistency (.58). Identified regulation had a questionable level of internal consistency (George & Mallery, 2003), but for all other scales alpha reliability was rather acceptable (Table 3).

Study 2: Results

Life satisfaction was positively related to personal improvement, very weakly related to ego-enhancing and not related to ego-protection (Table 3). Personal improvement goal corresponded positively to high self-determined forms of motivation (intrinsic, integrated and identified), negatively to amotivation and it was not related to introjected regulation. The two ego goals were positively related to low self-determined forms of motivation such as introjection and amotivation and had no meaningful relationship with high self-determined types of motivation.

Study 2: Discussion

The correlation pattern between life satisfaction and global goal orientations in Studies 1 and 2 was quite similar. However, the magnitude of relationships was somewhat lower in Study 2 in comparison to Study 1.This can be ascribed to the larger number of participants and schools in Sample 2 than in Sample 1. In other words, Study 2 participants might have been more representative of the Greek adolescent population than Study 1 participants. In general, these findings suggest that the adoption of a global personal improvement goal might be better for adolescents' life satisfaction than the adoption of global ego goal orientations.

The emerged correlation findings between global goal orientations and self-determined motivation were in line with hypotheses. The adoption of a global personal improvement goal seems pertinent to life skills programs because it is linked with high levels of self-determined motivation across contexts and with satisfaction in life. On the other hand, ego goal orientations were positively associated with low levels of self-determined motivation which should be avoided according to contemporary theorists of motivation (Deci & Ryan, 1985).

In sum, in Studies 1 and 2 two global constructs were used as criteria to investigate external validity of the global goal orientations measure. The positive correlation results were in line with hypotheses and supportive of the external convergent validity of this instrument. Moreover, the negative relationship between personal improvement goal and amotivation and the findings suggesting that global ego goal orientations were not related to intrinsic and identified regulation were supportive

of the instrument's external convergent validity. These findings were encouraging but not enough to establish that global goal orientations are linked with important cognitive-affective units of the person such as beliefs, affects, self-regulatory strategies and behaviours (Mischel & Shoda, 1998). Study 3 was undertaken in order to examine the association of global goal orientations with self-regulatory strategies, affects and beliefs at both global and contextual levels of generality, as well as with behaviours in physical activity and academic settings.

Study 3: Global goal orientations, self-regulation, affect, beliefs and behaviours

Self-regulation

Central to life skills programs is the development of self-regulatory strategies such as goal setting, self-talk, self-monitoring and help-seeking. These self-regulatory strategies are determined by more basic self-regulatory functions. Kruglanski, Thompson, Higgins et al., (2000) described two global self-regulation functions that emerge across activities. *Locomotion* is concerned with movement from state to state and with committing the psychological resources that will initiate or maintain goal-related movement. *Assessment* is concerned with critically evaluating entities or states in relation to alternatives in order to judge relative quality. Because personal improvement goals involve continually making progress, locomotion is the typical self-regulation function for individuals adopting strong personal improvement goals. Assessment is inherent in the self-evaluative process of high ego-oriented people. Nevertheless, while striving to exhibit better qualities than others is a proactive approach, avoiding certain actions in order to prevent negative judgments from others is not. Hence, locomotion was expected to have positive relationship with personal improvement and ego-enhancing goals in life but not with ego-protection. On the other hand, the action approach of high ego-enhancing people should be partly hampered by their involvement in the assessment process. Thus, locomotion should have stronger connection to personal improvement goals than to ego-enhancing goals. The above hypotheses concerning the relationship of locomotion and assessment with personal improvement and ego-enhancing achievement goals have been indirectly supported by research from Kruglanski et al. (2000, Study 5) at the contextual level of generality.

If the above associations hold true, then the adoption of a particular global goal orientation should lead to the same pattern of self-regulatory processes across different actions. Self-regulatory

processes are defined as the specific self-initiated personal, behavioural and environmental processes designed to attain personal goals cyclically (Zimmerman & Kitsantas, 2005). Typical self-regulation processes in achievement contexts are planning and goal-setting, self-monitoring, self-evaluation, self-talk or self-instruction, imagery, task-related strategies, time management, environmental structuring and help seeking (Zimmerman & Kitsantas, 2005). In the educational domain they are also called metacognitive strategies because they constitute an important component of metacognition, which is defined as knowledge or awareness of one's cognitive processes and the efficient use of this self-awareness to self-regulate these cognitive processes (Brown, 1987). One's knowledge of her cognition can be declarative (knowledge about the self and the personal strategies), procedural (knowledge about how to use these strategies) and conditional (knowledge about when and why to use these strategies) (Brown, 1987).

The development of knowledge of one's cognitive processes and the use of this knowledge to self-regulate these processes requires a proactive approach, striving towards personal progress and commitment towards self-change and self-improvement, which are the typical characteristics of people pursuing personal improvement goals. The most prevalent self-regulatory processes in personal improvement goal adoption were expected to be (1) self-monitoring, which is necessary to gather feedback and maintain personal progress (Ames, 1984), (2) self-talk or self-instruction, which bolsters up commitment for self-improvement (Ames, 1984), (3) planning and goal setting, which is the most typical process for proactive individuals (VandeWalle, Cron, & Slocum, 2001), (4) task-related strategies, which involve intrinsic interest for task mastery (Nicholls, 1989). Because individuals adopting high ego-enhancing goals are relatively proactive, they should probably adopt some of these strategies, although with less eagerness than people adopting strong personal improvement goals. High ego-oriented people should prefer processes involving the comparative aspect of self-regulation, such as evaluation of one's processes and outcomes in comparison to others'. The adoption of self-regulatory strategies should probably increase high ego-enhancing oriented individuals' awareness about these cognitive processes, nevertheless, still not as much as in the case of personal improvement oriented individuals who should be more persistent in the use of these strategies. Individuals adopting strong ego-protection goals were not expected to pursue most of these self-regulatory processes

because they are not proactive. Most of these hypotheses have been indirectly supported by a similar pattern of findings stemming from investigations across various contexts, such as school (Al-Emadi, 2001; Ames & Archer, 1988; Ben-Ari & Eliassy, 2003; Meece, Blumenfeld & Hoyle, 1988; Meece & Miller, 2001; Nolen, 1988; Wolters, 2004), sport and physical education (Ommundsen, 2003; Solmon & Lee, 1997; Theodosiou & Papaioannou, 2006) and work (Porath & Baterman, 2006; VandeWalle, et al., 2001). In the current study the association of self-regulatory strategies in physical education with goal orientations at both global and contextual levels of generality was examined.

Affect

In the first two studies the connection of global goal orientations with life satisfaction was examined. Life satisfaction is the cognitive component of subjective well-being. The presence of positive affect and the absence of negative affect are also important facets of subjective well-being (Diener et al., 2003). Cybernetic theories of self-regulation suggest that affect arises as a consequence of a feedback process (Carver & Scheier, 1998; Carver, 2004). When progress toward a goal at a rate lower than a standard is reckoned, the outcome function is negative affect. Progress toward goal at a rate higher than a standard elicits positive affect. Because the standard is subjective in personal improvement goal adoption, the outcome function is positive affect as long as progress occurs. Carver and Scheier (1998) review findings indicating that affect arises from progress towards goals rather than from attainment per se. People adopting personal improvement goals are more likely to reckon progress towards goals and experience positive affect in every day life because they are flexible to adjust self-referenced standards to their own attainments. People adopting ego-oriented goals espouse normative standards and therefore they are not flexible to adjust these standards to their needs. In general, when self-referenced standards are adopted, progress towards attaining the expected self is more controllable and realistic and, therefore, eliciting more positive affect, than when the expected self is normatively defined. Conclusions drawn from meta-analyses on the relationship of achievement goal orientations and affect are in line with these assertions (Ntoumanis & Biddle, 1999).

Beliefs

Life skills and interdisciplinary programs are expected to promote values and beliefs characterising socially useful individuals. Central to the approach of Nicholls is that achievement

goals correspond to different philosophies about people's purpose in life, in school (Nicholls, Patashnick & Nolen, 1985; Nicholls, 1989; Thorkildsen, 1988), sport, physical education and dance (Duda, 1989; Niminen, Varsala, & Manninen, 2001; Papaioannou & MacDonald, 1993), and work (Maehr & Braskamp, 1986). Drawing from the similarity of these studies' results across settings, it was hypothesized that a global personal improvement goal in life would be positively related with the belief that what should be pursued in life is contribution to society and understanding nature and science, while an ego orientation would be positively linked with the belief that one's purpose of life is to acquire power, wealth and social status. These hypotheses were examined at both global and contextual level of generality. Specifically, global goal orientations and achievement goals in physical education were examined in association with beliefs in life and perceived purposes of physical education (Papaioannou & MacDonald, 1993). The lack of research on the association of beliefs with performance avoidance goals does not allow the development of certain hypotheses on this topic. It seemed possible to assume, however, that ego-protection and performance avoidance goals would have no links with perceived purposes of physical education and life suggesting an approach tendency in life, such as contributing to society, understanding science or striving to acquire status and power.

Behaviours

Frequent exercise, academic behaviours such as reading and preparation for school, and academic achievement, are important outcomes of life skills programs in adolescence. According to theories of self-regulation (Bandura, 1986; Carver & Scheier, 1988) these behaviours are directly determined by affect and adaptive self-regulatory processes and indirectly by their determinants and specifically by global goal orientations. Given that most of the adaptive affects and self-regulatory processes are linked with personal improvement goal orientations, it was hypothesized that exercise, adaptive academic behaviours and school achievement might be positively associated with global personal improvement but not with global ego goal orientations. Indeed, all the preceding hypotheses concerning ego-protection goals imply that these adaptive behaviours and academic achievement might be either unrelated or negatively connected with global ego-protection goal orientation.

<div align="center">Study 3: Summary of purposes</div>

Based on suggestions that validity testing should include investigations for social desirability response bias, we followed recommendations to investigate all aforementioned associations using partial correlations controlling for social desirability effects (King & Bruner, 2000). If these partial correlations provide support to the current hypotheses, they will also provide evidence of external convergent and divergent validity of the global goal orientations measure.

An important focus of the study was the distinctiveness of global goal orientations from goal orientations in physical education. Accordingly, we examined the unique effects of global and contextual goals on self-regulation, affect and beliefs in physical education and life and on specific behaviours in school and exercise settings. Evidence of unique effects of global goal orientations has important theoretical and practical implications. Most of the achievement goals studies are conducted in specific domains. Researchers can use the global goal orientations measure to examine whether the effects of goal orientations generalize beyond this particular context. Moreover, practitioners, particularly those administering life skills programs, should adopt specific strategies to develop goal orientations in life and not just in the specific context where the intervention takes place (Papaioannou & Milosis, in press). In general, we hypothesized that global goal orientations explain additional variance of global constructs of self-regulation, affect and beliefs than the variance which was already explained by contextual achievement goal orientations. This additional variance reflects the summative effects of achievement goal orientations across various life contexts that cannot be captured with a single contextual measure of achievement goal orientations. On the other hand, we hypothesized that achievement goal orientations in physical education would be better predictors of behaviours, cognitions and affect that are specific to the physical activity context than global goal orientations measures.

Apart of validity, the instrument's reliability was also investigated. In addition to scale internal consistency, stability of global goal orientations over a 2-weeks period was examined.

Study 3: Method

Participants (Table 1) responded to questionnaires twice. In Time 1 they completed the measures "global goal orientations", "achievement goals in physical education" and the short version

of the Marlowe – Crowne social desirability scale (Reynolds, 1982). They also completed the

following three measures that were specific to physical education domain.

Purposes of physical education. Students completed four of the seven scales of the "purposes

of physical education questionnaire". This was developed by Duda (1989) and was adapted in Greek

by Papaioannou and MacDonald (1993). Following the stem "A very important thing physical

education should do" students responded to 46 items on a 5-point Likert-type scale (5 = *strongly*

agree, 1 = *strongly disagree*) assessing the factors "facilitate good citizens" (7 items, e.g., "make us

loyal"), "promote physically active lifestyles" (5 items, e.g., "teach us how to exercise"), "promote

high status/career" (6 items, e.g., "help us get into the best colleges") and "promote competitiveness"

(8 items, e.g., "teach us the "killer instinct""). The items of the remaining three factors were not

distributed because the total number of items of the whole battery of questionnaires of this wave would

be unacceptably long. In the present study principal component analysis with oblimin rotation

revealed four factors with eigenvalues higher than 1. All items loaded to factors (higher than .45) in

line with Duda's findings and all scales had acceptable levels of internal consistency (Table 5).

Metacognition in physical education. The original version of this tool was developed in Greek

(Theodosiou & Papaioannou, 2006) and it is an adaptation of the Metacognitive Awareness Inventory

(MAI; Schraw & Dennison, 1994) for physical education. Following the stem "In the Physical

Education class…" students responded to 45 items composing eight factors as follows: *Information*

management (6 items: e.g., "I think if the exercise I am learning reminds me of another one I already

know"); *Planning* (4 items: e.g., "it is clear for me what I want to learn"); *Self-monitoring* (4 items:

e.g., "the moment I perform an exercise, I check if I actually learn it right"); *Debugging strategies* (7

items: e.g., "when I make a mistake I stop and try again being more careful); *Evaluation* (7 items:

e.g., "since I have learned an exercise I think if there was an easier way to succeed"); *Conditional*

knowledge, (6 items: e.g., "when I want to learn a difficult exercise I follow a learning method");

declarative knowledge, (6 items: e.g., "I realize which exercises I can perform right"); *procedural*

knowledge, referring (5 items: e.g., "I have a clear view of how to put in practice a learning method I

have been taught"). Responses were indicated on a 5-point Likert-type scale (5 = *strongly agree*, 1 =

strongly disagree). The alpha reliability coefficient for each of these scales was above .70 with the exception of planning (Table 5). The alpha coefficient for the total metacognition scale was .96.

PANAS in Physical Education. Students were asked how they usually feel in physical education and then they responded to the 20-item Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988), which is rated in a 5-point Likert-type scale (1= *not at all, 5 = extremely*). Back translation was used for this instrument which was used in earlier unpublished studies in Greece from which a three factor solution emerged: one factored suggesting positive/pleasant affect ("enthusiastic", "interested", "determined", "inspired", "active", "strong", "proud", "attentive"), one factor implying negative/unpleasant activation affect ("upset", "jittery", "nervous", "irritable", "hostile") and one factor suggesting negative/unpleasant deactivation affect ("scared", "afraid", "ashamed", "distressed"). The split of the negative/unpleasant affect factor into activation and deactivation coincides with similar suggestions (Feldman Barrett & Russell, 1998) and a refinement of the PANAS model (Watson, Wiese, Vaidya, & Tellegen, 1999). Three items (excited, alert, guilty) were not included in the present analysis because they impaired the factor structure and internal consistency of scales. For this 3-factor structure goodness-of-fit indices were as follows: chi square = 314, df = 116, GFI = .93, CFI = .92, TLI = .91, RMSEA = .06. All standardized beta weights were above .49 ($p < .001$). There was a high positive correlation between the two negative/unpleasant factors ($r = .70$, $p < .001$) and very low correlation between positive/pleasant and negative/unpleasant activation affect factors ($r = .16$, $p < .01$) and between positive/pleasant and negative/unpleasant deactivation affect ($r = -.12$, $p < .05$). These findings are in line with theoretical assertions concerning the pleasantness versus unpleasantness and activation versus deactivation dimensions of affect (Feldman Barrett & Russell, 1998). According to Watson et al., (1999), the present split of the unpleasant factor reflects the operation of the two broad motivational systems that mediate goal-directed approach and withdrawal behaviors and, therefore, it assists for a more precise investigation of the convergent-divergent validity of the global goal orientations factors.

Two weeks later (Time 2) the same students completed again the goal orientations in life and achievement goals in physical education questionnaires and the following measures assessing global psychological constructs and specific behaviors.

PANAS. Positive negative affect in life was assessed with the 20-item PANAS (Watson et. al., 1988). For the aforementioned 3-factor structure goodness-of-fit indices were as follows: chi square = 247, df = 116, GFI = .95, CFI = .93, TLI = .92, RMSEA = .05. All standardized beta weights were above .30 ($p < .001$). The magnitude of factor correlation was moderate between the two negative/unpleasant factors ($r = .47, p < .001$), almost zero between positive/pleasant and negative/unpleasant activation factors ($r = -.01, p > .10$) and low negative between positive/pleasant and negative/unpleasant deactivation affect ($r = -.22, p < .001$).

Locomotion and Assessment. Students responded to the measure of Kruglanski, Thompson, Higgins et al. (2000) capturing two aspects of self-regulation suggesting Locomotion (12 items) and Assessment (12 items), which are rated on a 6-point Likert scale ranging from 1 (*strongly disagree)* to 6 (*strongly agree)*. Back translation had been used for this instrument before its usage in a pilot study (N = 215) searching for initial evidence of its construct validity and reliability. Following findings from exploratory factor analysis, reliability analysis and correlations with other psychological constructs, seven items were deemed appropriate to capture Locomotion ("I don't mind doing things even if they involve extra effort", "I enjoy actively doing things, more than just watching and observing", "when I finish one project I often wait a little before getting started on a new one (reverse scored)", "when I decide to do something, I can't wait to get started", "by the time I accomplish a task, I already have the next one in my mind", "most of the time my thoughts are occupied with the task I wish to accomplish", "when I get started on something, I usually persevere until I finish it") and six items were regarded appropriate to capture Assessment ("I like evaluating others' plans", "I often compare myself with other people", "I often critique work done by myself and others", "I am a critical person", "I am very self-critical and self-conscious about what I am saying", "I often think that other people's choices and decisions are wrong"). In the present study results from confirmatory factor analysis revealed that the two-factor structure of this instrument was regarded marginally acceptable, chi square = 133, df = 64, GFI = .96, CFI = .92, TLI = .90, RMSEA = .05; all standardized regression weights were above .41 (p <.001). Reliability alpha was deemed acceptable (.74) for the assessment scale and questionable (.64) for the locomotion scale (George & Mallery, 2003). Because the development of this tool was not the focus of this study, these two scales were

retained as criteria for the investigation of the convergent and divergent validity of the global goal orientations measure.

Purposes in life questionnaire. The items for this questionnaire were developed based on similar items that were used by Nicholls (1989) investigating contribution to society, acquisition of power and status and understanding and promoting science. Following the stem "What is worth to pursue a man (or woman) in life?" responses are given to 26 items (shown in Table 4) on a 6-point Likert scale anchored by 1 = *under no circumstances* to 6 = *this above everything else.* In this study, principal components analysis on students' responses to this scale followed by oblimin rotation resulted to 3 factors with eigenvalues larger than 1, explaining 49.2% of the total variance. Results stemming from the pattern matrix are shown in Table 4. The first factor consisted of items indicating contribution to society, the second factor was constructed by items suggesting status, power and affluence, and the third factor included items suggesting understanding nature and science. Based on alphas suggesting acceptable levels of reliability for two scales but questionable for the scale capturing understanding science (Table 5), scale score were computed for each of these factors. Results involving scales with low internal consistency should be interpreted with caution.

Exercise behaviour. Following a description of intensive exercise (i.e., when we sweat and our pulses are over 120, usually after basketball, football, or aerobic) responses were provided to two items capturing sessions of intensive exercise involvement of at least one hour duration each. The first referred to the last month, and the second referred to the mean of exercise sessions per month for the period covering the last three months. Students were asked to exclude participation in school physical education. Six-point scales were used for these items (*1 = not at all, 6 = more than 20 times*).

Preparation for school. This was assessed with two items asking how many times the student went to school fully prepared for all the lessons of the day, in the last month and in the last two months respectively. Responses were indicated to six-point scales (from *1 = not at all* to *6 = more than 20 times,* and from *1 = not at all* to *6 = more than 40 times,* respectively).

Reading literature books in leisure time. Two items were used asking the number of literature books that the student read in the last six months (rated from *1 = none* to *6 = five or more than five*) and in the last 12 months (rated from *1 = none* to *6 = ten or more than ten*).

Academic performance. Students reported the mean of their grades in all school subjects and

their grade in Greek language. Due to high internal consistency between the two grades (Table 5), the

mean of these two marks was used as an index of academic performance. Responses on all behavioral

measures were standardized followed by investigation of scale reliabilities suggesting good levels of

internal consistency (Table 5).

Overview of Statistical Analyses

Investigation of criterion validity for the global goals measure included partial correlations of

the three global goals that were assessed in Time 1 with purposes of life, positive and negative affect,

locomotion and assessment regulation, exercise involvement, school preparation and literature reading

that were captured in Time 2, controlling for social desirability. Likewise, controlling for social

desirability, we computed partial correlations of the three global goals in Time 2 with purposes of

physical education, positive and negative affect and metacognition in physical education in Time 1.

Finally, all the criterion variables of Study 3 were regressed on goal orientations in life and in the

physical education domain. In all regression analyses, Time 2 criterion variables were regressed on

Time 1 goal orientations, and the vice versa. Hence, the findings from these analyses provide initial

evidence of predictive validity, although it is acknowledged that the 2-weeks period is a very short

time.

<center>Study 3: Results</center>

Correlations of global goals with life purposes, affect, self-regulation and behaviours controlling for
social desirability

Initially, the relationship of global goals with the social desirability scale was examined. It

emerged that social desirability had low positive relationship with personal improvement ($r = .17$,

$p<.01$) and low negative relationship with ego-enhancing ($r = -.14$, $p<.05$) and ego-protection goals (r

$= -.13$, $p<.05$).

Next, partial correlations were computed between goal orientations in life in Time 1 and all

criterion variables that were measured in Time 2 and between goal orientations in life in Time 2 and

all criterion variables that were measured in Time 1. In all analyses social desirability was the

controlling variable. The findings in Table 5 suggest that a personal improvement goal in life had

rather moderate positive relationships with (1) the belief that one's purposes in life is to contribute to society, (2) positive/pleasant affect in life, (3) locomotion, (4) procedural and declarative knowledge and self-monitoring in physical education. A global personal improvement goal had low positive relationships with the belief that one's purpose in life is to understand and develop science, with all remaining metacognitive strategies in physical education and with exercise involvement, school preparation, reading literature in leisure time and academic grades. These findings are in line with theoretical assumptions and provide further evidence of convergent validity. On the other hand, evidence of divergent validity is the lack of correspondence of personal improvement goal to negative affect and purposes of life suggesting acquisition of power and affluence.

In line with hypotheses, an ego-enhancing goal had rather moderate positive relationship with (1) purpose of life to acquire status, power and affluence, (2) the belief that physical education should promote competitiveness and one's status, (3) assessment. Ego-enhancing goal adoption had low positive relationships with (1) pleasant and unpleasant activation affect, (2) locomotion and (3) most metacognitive strategies. As was expected, ego-enhancing was not related to purposes of life indicating contribution to society and understanding nature and science, which provides evidence of divergent validity. Moreover, this goal orientation was unrelated to exercise, school preparation and academic performance and was negatively related to reading literature, albeit this relationship was very weak.

An ego-protection goal had no association with any purpose of life, but it was positively related with both the activation and deactivation facets of negative/unpleasant affect. Ego-protection corresponded positively to assessment, very weakly to locomotion, very weakly to metacognition and the two facets of unpleasant affect in physical education, and negatively to exercise involvement. On the other hand, ego-protection had a weak positive association with the active lifestyle purpose of physical education and a marginally significant positive relationship with the promotion of good citizenship purpose of physical education.

Regression of global and physical education specific constructs on goal orientations in life and in physical education

Tables 6 and 7 portray standardized beta values from seventeen regression analyses using as dependent variables (a) the seven global constructs of self-regulation, affect and beliefs, (b) the two academic behaviors, and (c) the eight physical education specific variables. In all regression analyses independent variables were the goal orientations at the global level of generality and in the physical education domain. Results from regression analyses of school grades and unpleasant activation affect in physical education are not reported because their Multiple R was low (R<.20, *p>.01*).

Table 6 findings indicate that global goal orientations in Time 1 made a significant contribution to the prediction of global and academic constructs in Time 2. Specifically, global personal improvement goal made a unique positive contribution to the explanation of variance of pleasant affect in life, locomotion, preparation for school and reading literature and beliefs that contribution to society and understanding science are important purposes in life. Global personal improvement goal made a negative contribution to the explanation of variance of unpleasant activation affect and the belief that acquisition of power is an important purpose in life. Both global ego orientations made a positive contribution to the explanation of assessment, but only ego-enhancing goal was connected with the belief that acquisition of power and status is an important aim in life. On the other hand, global ego-protection goal made a positive contribution to the explanation of variance of presence of unpleasant affect and absence of pleasant affect.

Mastery orientation in physical education made a unique positive contribution to the explanation of variance of locomotion and beliefs that contribution to society and understanding science are important purposes in life. On the other hand, performance approach goal in physical education had positive contribution to the explanation of assessment.

Results shown in Table 7 suggest that mastery orientation in physical education made a positive contribution to the explanation of exercise behaviour, metacognition and pleasant affect in physical education, and the beliefs that the promotion of active lifestyle and good citizenship are important purposes of physical education. On the other hand, performance avoidance goal in physical education was connected with the absence of pleasant affect in physical education. Performance approach goal made no contribution to the explanation of any variable that was pertinent to physical

education context. A marginally significant standardized beta weight emerged concerning the connection of performance avoidance goal with metacognition in physical education.

Global personal improvement goal made a positive contribution to the explanation of metacognition in physical education and the belief about active life style and negative contribution to the explanation of unpleasant deactivation affect. Global ego-enhancing goal made a positive contribution to the explained variance of the beliefs that the promotion of status/career and the development of competitiveness are important purposes of physical education. Moreover, global ego-enhancing goal made a marginally positive contribution to the explanation of pleasant affect in physical education. Global ego-protection goal contributed positively to the explanation of variance of the belief that the promotion of active lifestyle is an important purpose of physical education. Nevertheless, global ego-protection goal orientation made a negative contribution to the explanation of variance of exercise behaviour.

Stability of goal orientations in life

Using the repeated data with the two-week interval (Study 3), structural equation models using AMOS 5 software were developed to examine stability coefficients of goal orientations in life. In these analyses the appropriate paired uniquenesses or errors were allowed to covary (Duncan & Stoolmiller, 1993; Marsh, 1989). Stability coefficients (i.e., standardized beta values) for the two-week period were as follows: (1) for personal improvement goal, $\beta = .65$, (2) for ego-enhancing goal, $\beta = .81$, and (3) for ego-protection goal, $\beta = .80$.

<div align="center">Study 3: Discussion</div>

Life skills programs aim at developing adaptive self-regulation strategies in life and increasing well-being. Moreover, physical education curricula aim at promoting active lifestyles and good citizenship. These outcomes are more likely to occur if life skills and interdisciplinary programs in physical education and sport incorporate specific teaching strategies targeting the adoption of personal improvement goal in life. It emerged that personal improvement goal orientation made a positive contribution to the prediction of locomotion across activities and metacognition in physical education, pleasant affect in life, adaptive academic behaviours and beliefs that contribution to society and advancing science is an important purpose in life.

On the other hand, the present findings discourage the adoption of a global ego-protection goal or performance avoidance goals in physical education contexts, because they were not predictors of any adaptive cognition, affect or self-regulatory function. Indeed, a global ego-protection goal adoption was predictor of the presence of unpleasant affect in life, the absence of pleasant affect in life and decreased levels of exercise involvement.

Global ego-enhancing goal orientation was weakly associated with some adaptive cognitive-affective units but also with some maladaptive. Global ego-enhancing goal orientation had low positive association with a variety of metacognitive strategies in physical education. These relationships of low magnitude could be expected, taking into consideration that the adoption of a global ego-enhancing goal entails a number of global self-regulatory strategies, such as assessment and locomotion, which are embedded in all metacognitive strategies. Moreover, global ego-enhancing goal was positively linked with both pleasant and unpleasant activation affect. Given that the present items of positive/pleasant affect seem to be connected with an approach/activation system (Watson et al., 1999), these findings seem to align both with Carver's and Scheier's (1998) prediction and with the present approach. Adopting of strong ego-enhancing goal is linked with a strong approach tendency and increased probabilities to monitor progress towards one's goals in life, eliciting pleasant affect. However, normative goals are relatively uncontrollable and sometimes unrealistic. Thus, the intensity of pleasant affect is abated because progress towards relatively uncontrollable goals is not always possible to occur. Several times high ego-enhancing individuals realize that they are far behind their expected goals and experience unpleasant affect accompanied by strong pressure to achieve these goals. This approach does not seem very productive in the long term. A global ego-enhancing goal adoption made no contribution to the prediction of academic performance and school preparation and it was negatively linked with reading literature, albeit this relationship was weak. Finally, even if global ego-enhancing goals might entail some self-serving benefits, their adoption is not so welcomed in the social milieu. A global ego-enhancing goal was predictor of self-serving beliefs such as the acquisition of power and high status and the development of competitiveness but it was largely unrelated to socially useful beliefs.

The association of contextual goals with global and contextual constructs was in line with existing literature (Roberts, Treasure & Conroy, 2007). Mastery orientation in physical education was positively connected with beliefs that contribution to society is an important purpose in life and cultivation of good citizens an important purpose of physical education. The promotion of good citizenship is one of the aims of a contemporary physical education curriculum that started in Greece before the Olympic Games and continues until today (Greek Ministry of Education, 2008). Moreover, mastery goal in physical education was positively related to beliefs that understanding nature and science is an important purpose of physical education. This is also an aim of the new interdisciplinary physical education curriculum of Greece (Greek Ministry of Education, 2003). Finally, mastery orientation in physical education was positive predictor of exercise, pleasant affect in physical education and beliefs that active lifestyle is an important purpose of physical education. Of course, the promotion of active lifestyles and pleasant affect in physical activity settings is priority in Greek and most contemporary physical education curricula around the world. In sum, the present findings indicate that the views of mastery oriented students in physical education coincide with the aims of the contemporary physical education curricula.

Mastery goal in physical education explained additional variance of exercise involvement, pleasant affect and metacognition in physical education, than the variance which had been explained by global goal orientations. These findings were expected because all these dependent variables were pertinent to the physical education context. Cognitive-affective units that are pertinent to a particular context are expected to have joint connection with more context-specific schemata, and therefore, to have stronger links with context-specific goals than with abstract goals. Interestingly, mastery goal in physical education explained additional variance of locomotion than the variance which had been explained by global goal orientations. Mastery goal in physical education triggers movement, which is inherent in the concept of locomotion. To sum up, these findings are in line with the assumption that contextual goal orientations explain additional variance of context-specific cognitions, affects and behaviours than the variance which is explained by global goal orientations.

On the other hand, global goal orientations explained additional variance of global psychological constructs such as beliefs about purposes in life, affect in life, global self-regulation

functions and academic behaviours, than the variance which had been explained by contextual goal orientations. These findings underscore the importance of adopting specific strategies aimed at increasing personal improvement goal in life and decreasing ego goal orientations in life, particularly ego-protection. A thorough description of these teaching strategies and how they go beyond teaching strategies targeting context-specific goal orientations is described in Milosis and Papaioannou (2007).

Targeting mastery in specific contexts without teaching adolescent how to pursue personal improvement goals in life might have limited and short-term effects. Anecdotal evidence stemming from past interventions in physical education revealed that adolescents were not excited about adopting mastery goals aimed at increasing athletic competences and levels of exercise involvement without understanding the importance of adopting personal improvement goal in life in general (Christodoulidis, Papaioannou, Digelidis, 2001; Digelidis, Papaioannou, Christodoulidis & Laparidis, 2003). For many adolescents looking for meaning and reasons for commitment across social contexts, skill improvement just in physical education might be of minor importance. Accordingly, in their most recent intervention study (Milosis & Papaioannou, 2007; Papaioannou & Milosis, in press), in addition to mastery goal-setting in physical education, students were also taught the importance of generalizing personal improvement goal pursuit in life and how to pursue personal improvement goals in school, sport and home. As was expected, the program had a positive effect on the development of global personal improvement goal and the magnitude of intervention effects was much higher than in previous interventions.

Some findings seem odd. Both mastery goal in physical education and personal improvement goal in life were significant predictors of pleasant affect in life. This finding maybe underscores the importance of sport achievement and mastery goal adoption in sport and exercise contexts in adolescence. Moreover, both performance approach and global ego-enhancing goals were predictors of global assessment self-regulation function. This maybe due to the increased requirements for competition and the subtle criteria of assessment in physical education requiring continuous assessment of one' goal attainment relative to others'. Certainly, contextual goal orientations are formatted by experiences in particular life settings and then they partly affect (and are affected by) global goal orientations (Guay, et al., 2003). Future longitudinal or field experimental research might

provide a better picture of the causal relationships among affect and self-regulation in life with goal orientations at contextual and global levels of generality.

       Other findings might look odd but in fact maybe they aren't. A global ego-protection goal had low negative relationship with exercise involvement but low positive relationship with the belief that the promotion of active lifestyle is an important purpose of physical education. Exercise involvement is largely the outcome of activation affect and self-regulation processes which are absent in ego-protection goal pursuit. On the other hand, as Carver and Scheier (1998) noted, moving away from a goal and a corresponding avoidance tendency characterizes individuals who are conscious about health matters. Undoubtedly, further research is needed to establish these findings and explanations.

<div align="center">General Discussion</div>

       The present studies provided initial support to the psychometric properties of an instrument that might be useful in programs adopting a holistic approach of adolescents' development and in research focusing on the effects of goal orientations beyond a given context. In general, the findings supported the factorial, convergent, divergent and predictive validity of the global goal orientations measure. Importantly, the results also imply that the global goal orientations measure is appropriate for usage in life skills programs because it explains additional variance of abstract cognitive-affective constructs than the variance which is explained by achievement goals in physical education[3]. The promotion of life satisfaction and pleasant affect and the elimination of unpleasant affect is an end in itself in life skills programs. Moreover, the promotion of locomotion and the belief that contribution to society should be a primary purpose in life have repercussions across life contexts. Last but not least, the facilitation of adaptive academic behaviours such as reading literature and preparation for school should be an important aim of life skills programs.

       The present findings do not imply causality, but existing research (Papaioannou & Milosis, in press) and the magnitude of the present relationships in conjunction with the theoretical assumptions which were outlined in the introduction seem to suggest that global goal orientations are determinants of some of the present abstract cognitions and affects.

       The results supported the reliability of global goal orientations scales across three studies and they indicated that goal orientations in life remain relatively stable in a two-week time. Evidence about

the sensitivity of the global goal orientations measure to year-long interventions focusing on the development of life skills is published elsewhere (Papaioannou and Milosis, in press). In their study, the application of an interdisciplinary curriculum in physical education increased personal imrpovement goal in life, decreased ego-enhancing and ego-protection goal in life and had positive effects on multidimensional self-concept, life satisfaction and satisfaction in physical education and academic settings (Milosis & Papaioannou, 2007). These and the present findings collectively indicate that the global goal orientations measure is an appropriate tool for usage in physical education and sport programs aimed at developing interdisciplinary/life skills.

Global ego-protection goal orientation emerged as more maladaptive than ego-enhancing for individuals' well-being. On the other hand, global ego-enhancing goal orientation was associated with beliefs favouring competitiveness, status and power. Selfishness seems to have stronger connection with ego-enhancing goals than with personal improvement goals. For those who believe that physical education and sport should promote individuals' progress in conjunction with social harmony, the emphasis on personal improvement and the decrease of social comparison and ego goal adoption is the best strategy to follow.

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4

1   Appendix

2   *Personal improvement goal*

3   I am trying hard to improve myself in anything that I am lacking

4   I am more pleased when I improve myself in something, that I wasn't so good at before

5   I am trying hard to constantly improve myself

6   One of my principles is to always give my best try

7   I will never stop trying to become even better

8   *Ego-enhancing goal*

9   I am striving to prove that I am a more important person than others

10   The though that I will appear more important than others makes me try

11   My principle is to prove that I am superior to others

12   I want to seem better than other people in all sectors of life

13   I grow enthusiastic with the idea that I will seem better than others

14   *Ego-protection goal*

15   I often worry that I may be negatively judged by others

16   I often worry how I will appear to others

17   I often worry about the possibility of being characterized badly

18   I am a person who is afraid of others' negative comments

19   I care a lot about how others see me and this makes me often worry

20
21
22

23

1   Footnotes

2   [1] Nicholls (1989) linked the constructs of goal orientations with the concept of success, which is

3   defined "the achievement of one's aim or goal" (Wikipedia, 2008). Adopting Carver and Scheier's theory

4   (1998), global goal orientations were presently linked not only with achievement of one's goal but also

5   with progress towards goal attainment.

6   [2] The term ego-involvement has been used by de Charms (1968) to define a state in which behaviours

7   are motivated by a desire to protect or enhance self-esteem. Nicholls adopted a definition of ego-involvement

8   at the highest level of abstraction that is similar to the ego-enhancing term: "Ego involvement connotes the

9   desire to enhance the self by establishing one's superiority relative to others, even when one might not

10   directly competing with or even imagining any specific others" (Nicholls, 1989; pp. 87). Nicholls linked the

11   constructs of goal orientations with the concept of success. However, the concept of success is widely used at

12   a global level, in social domains, for health-related behaviours, etc. A recent search in the internet revealed

13   697000 websites with the exact phrase "successful life", 371000 websites with the exact phrase "successful

14   relationships", 282000 websites with the exact phrase "successful marriage", 58700 websites with the exact

15   phrase "successful retirement", 29500 websites with the exact phrase "successful smoking cessation".

16   Nicholls' theorization about the role of the more or less differentiated conception of ability in triggering

17   ego and task-involving goals can also apply at the highest level of abstraction. People construe their

18   perceptions of ability across different domains (e.g., academic, sport, social, emotional), at a global level

19   (Harter, 1999; Marsh, 1990; Shavelson, Hubner & Stanton, 1976) and at a metacognitive level concerning

20   their ability for self-regulation (Brown, 1987). Effort is also conceived to affect efficiency across various

21   domains (e.g., improve social relationships, commitment to a healthy lifestyle) and in life in general. In

22   Nicholls' terms, one can use the more or less differentiated conception of ability across various situations,

23   both in achievement and non-achievement contexts but also at an abstract level, which will trigger ego-

24   enhancing, ego-protection or personal improvement goals. For example, an athlete might try to enhance his

25   self-worth and establish his superiority relative to his co-athletes by attempting to present that his opinion

26   (i.e., knowledge on a subject) is better than his mates. Alternatively, if this athlete wants to improve his

27   relationship with his co-athletes, he might try to find the best possible solution in a problem in which he

28   apparently holds different opinion than his mates.

1   [3] In a recent longitudinal study involving 2500 adolescents (manuscript submitted for publication), three

2   goal orientation measures were used, the first at the global level of generality, the second assessing

3   achievement goals in sport and the third capturing achievement goals in language classes. Using factor

4   analytic procedures similar to the present ones, we found that global goals are distinct constructs from

5   achievement goals in sport and school. Moreover, global goals predicted additional variance of behaviors

6   such as smoking, drinking and truancy than the variance which had been explained by achievement goals in

7   sport and language classes. These findings indicate that in comparison to context-specific goal orientations

8   instruments, the global goal orientations measure is more appropriate to use in life skill programs aimed at

9   affecting goal orientations in life.

Table 1

Descriptive statistics and alpha reliabilities for global goal orientations in life scales across participants

Study	Participants	N	Personal improvement					Ego-enhancing					Ego-protection				
			Males		Females			Males		Females			Males		Females		
			M	SD	M	SD	$.\alpha$	M	SD	M	SD	$.\alpha$	M	SD	M	SD	$.\alpha$
1	Students aged 13	351	4.54	.53	4.62	.47	.71	3.14	.99	3.00	.94	.83	3.15	.93	3.54	.86	.77
2	Students aged 13	580	4.22	.73	4.35	.67	.74	3.09	1.06	2.74	.95	.83	3.31	1.00	3.40	.95	.80
3	Students aged 15$\pm$2	658	4.34	.66	4.38	.57	.72	2.95	1.12	2.78	1.07	.88	3.16	.95	3.47	1.02	.82

Note: Study 1 participants ($n = 175$ males, $n = 172$ females, $n = 4$ did not report sex) were involved in four randomly selected schools. Study 2 participants ($n = 294$ males, $n = 281$ females, $n = 5$ did not report sex) were extracted from 17 randomly selected schools. Study 3 participants ($n = 306$ males, $n = 340$ females, $n = 12$ did not report sex), aged $12 \pm .60$ ($n = 207$), $14 \pm .80$ ($n = 231$) and $16 \pm .10$ ($n = 220$), were involved in 34 randomly selected schools.

Table 2

Multi-Sample Confirmatory Factor Analysis on responses to two instruments assessing global goals in life and goals in physical education – 3 samples of students (n = 351, n = 580 and n = 658)

Model specification	NPar	Chsq	df	Chsq/df	TLI	CFI	RMSEA	AIC	ECVI	ECVI LO90-	HI90
"Global goals in life": 3-factor model (15 variables)											
M1 Unconstrained	96	612.7	309	1.983	.944	.952	.024	804.7	.485	.445	.530
Constrained											
M2 Loadings	84	630.4	321	1.964	.945	.951	.024	798.4	.482	.441	.527
M3 Loadings, intercepts	69	747.7	336	2.225	.931	.935	.027	885.7	.534	.489	.584
M4 Loadings, intercepts, variances, covariances	63	784.5	342	2.294	.927	.930	.028	910.5	.549	.502	.601
M5 All parameters	48	937.1	357	2.625	.908	.909	.031	1033.1	.623	.571	.680
"Global Goals in life" & "Achievement goals in PE": 6-factor model (33 variables)											
M6 Unconstrained	342	2790.7	1440	1.938	.912	.925	.024	3474.7	2.096	2.008	2.188
Constrained											
M7 Loadings	288	2904.7	1494	1.944	.912	.922	.024	3480.7	2.099	2.009	2.194
M8 Loadings, intercepts	222	3334.8	1560	2.138	.894	.901	.026	3778.8	2.279	2.181	2.382
M9 Loadings, intercepts, variances, covariances	180	3525.4	1602	2.201	.888	.893	.027	3885.4	2.343	2.242	2.449
M10 All parameters	114	4213.3	1668	2.526	.857	.859	.030	4441.3	2.679	2.566	2.796
"3 Goals in life/PE": 3-factor model (33 variables)											
M11 Unconstrained	297	4258.8	1485	2.868	.825	.846	.034	4852.8	2.927	2.811	3.047
M12 Constrained: Loadings	243	4549.3	1539	2.956	.817	.833	.034	5035.4	3.037	2.917	3.161

Table 3

Pearson correlations between global goals and intrinsic-extrinsic motivation (Study 2)

	Personal improvement	Ego-enhancing	Ego-protection	
	r	r	r	.α
Life Satisfaction	.31***	.11*	-.02	.68
Global motivation scale				
Intrinsic motivation	.42***	.09	.04	.84
Integrated regulation	.29***	.14**	.11*	.69
Identified regulation	.37***	-.01	.03	.65
Introjected regulation	-.08	.34***	.34***	.71
Amotivation	-.19***	.24***	.27***	.70

* *p*<.05, **p*<.01, *** *p*<.001

Table 4

Results from principal component analysis on the Purpose of Life items (Study 3)

Purpose in life items	F1	F2	F3
Money for a luxury life		.74	
To study in the most famous colleges, universities, etc.		.62	
To do his duty to society	.54		
Jobs that provide long vocations and money to travel		.76	
The others' recognition as the top in his job		.64	
In his job to overcome others in order to reach the top		.60	
To devote himself to the common interest	.66		
To be useful to others	.68		
Money to buy out everything		.62	
To help others	.75		
To sacrifice pleasures in order to do the right thing	.66		
Jobs where he will have the biggest power		.70	
To do things that he has to do, even if he doesn't want it	.52		
To understand the critical problems of modern societies	.69		
To make better the life of others	.66		
Jobs in which he can continue to learn	.67		
First of all to be responsible and loyal	.65		
To discover new technologies			.74
To understand nature and how it works			.61
To go deep into science			.79
To advance science			.77
To develop scientific knowledge			.76
To understand human relationships	.62		
Money to buy the best that exists		.73	
To understand towards where the society is progressing	.58		
To make new scientific discoveries			.83
Explained variance %	25.1	16.4	7.7
Eigenvalues	7.01	4.59	2.16
Alpha reliability	.82	.77	.62
Mean for scale score	4.76	3.83	4.33
Standard deviation for scale score	.73	.92	.89

Table 5

Partial correlations of global goals with beliefs, affect, self-regulation and behaviours

controlling for social desirability (Study 3)

	Personal improvement	Ego-enhancing	Ego-protection	$.\alpha$
Life purpose				
Contribution to society	.45***	-.01	.00	.82
Status – power	-.04	.36***	.10	.77
Understanding nature/science	.33***	-.02	.03	.62
Purpose of Physical Education				
Status/career	.03	.37***	.08	.83
Active lifestyles	.28***	.10	.15**	.76
Competitiveness	.08	.52***	.07	.85
Good citizens	21***	.10	.12*	.83
Affect – Generally in life				
Positive/pleasant	.38***	.20***	-.05	.70
Negative/unpleasant activation	-.09	.20***	.25***	.74
Negative/unpleasant deactivation	.00	.06	.36***	.75
Affect in Physical Education				
Positive/pleasant	.19***	.16**	.04	.83
Negative/unpleasant activation	-.09	.03	.13*	.78
Negative/unpleasant deactivation	-.10	.00	.17***	.74
Basic self-regulation functions				
Locomotion	.46***	.21***	.10	.64
Assessment	.00	.43***	.26***	.74
Metacognition in PE				

Debugging strategies	.33***	.08	.15**	.84
Information management	.21***	.25***	.14**	.85
Planning	.32***	.17***	.09*	.68
Evaluation	.22***	.24***	.09*	.85
Self-monitoring	.39***	.18***	.10*	.74
Conditional knowledge	.31***	.24***	.08	.86
Declarative knowledge	.37***	.10*	.05	.81
Procedural knowledge	.41***	.17***	.09*	.72
Behaviours				
Exercise	.24***	.00	-.14**	.83
Preparation for school	.23***	-.08	-.05	.91
Reading literature	.18***	-.13**	-.05	.94
Academic grades	.12*	-.05	-.08	.85

Note: * $p<.05$, **$p<.01$, *** $p<.001$

Table 6

Standardized beta values (β) and multiple correlations (R) from nine regression analyses

	Dependent Variable									
	Beliefs about purposes in life				Affect in life		Global self-regulation		Behaviours	
Predictors	Contribution to society	Status – power	Understand science	Pleasant affect in life	Unpleasant activation	Unpleasant deactivation	Locomotion	Assessment	Preparation for school	Reading literature
Personal improvement	.29***[1]	-.17**	.14*	.28***	-.15*	.03	.19***	-.09	.19**	.18**
Ego-enhancing	.09	.24***	.09	.14	.11	-.02	.09	.28***	-.11	-.08
Ego-protection	-.05	.04	.04	-.18**	.14*	.32***	.03	.16**	-.05	-.08
Mastery in PE[2]	.24***	.11	.28***	.23***	.03	-.06	.33***	.02	.06	.04
Perform. Appr. PE	-.16*	.19*	-.09	-.02	-06	-.06	.03	.20**	-.01	-.10
Perform. Avoid. PE	.13	.02	.04	.02	.08	.09	.06	-.06	.02	.07
R	.48***	.45***	.39***	.51***	.32***	.37***	.49***	.51***	.27***	.27***

Note. [1] Standardized beta values. Multiple correlations (R) are shown at the bottom line of the Table.

[2] PE = Physical Education. * $p<.05$, **$p<.01$, *** $p<.001$

Table 7

Standardized beta values (β) and multiple correlations from seven regression analyses

	Dependent Variable							
	Perceived Purpose of Physical Education				Affect in PE[2]		Total Metacognition in PE	Exercise
Predictors	High status/ career	Active lifestyle	Competitiveness	Good citizens	Pleasant	Unpleasant deactivation		
Personal improvement	.01[1]	.14*	.01	.11	.08	-.14*	.19***	.04
Ego-enhancing	.21**	.13	.40***	.08	.16*	-.03	.04	-.03
Ego-protection	-.09	.18*	-.08	.08	.09	.07	.03	-.14**
Mastery in PE	.11	.22***	.06	.22***	.28***	.04	.44***	.28***
Performance approach PE	.12	.03	.12	.06	.10	-.03	11	.10
Performance avoidance PE	.00	-.06	-.04	-.10	-.18**	.12	.12*	-.05
R	.32***	.40***	.49***	.34***	.45***	.22**	.47***	.38***

Note. [1] Standardized beta values. Multiple correlations (R) are shown at the bottom line of the Table.

[2] PE = Physical Education. * $p<.05$, **$p<.01$, *** $p<.001$