

## Assessment of Extrinsic and Intrinsic Work Motivations in a Sample of Nurses in Greece

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### ABSTRACT

**Background:** Adapting psychometrically tested tools, such as the 'Work Extrinsic Intrinsic Motivation Scale' (WEIMS), is a key element for the effective management of human resources in healthcare organizations and valid cross-cultural comparisons. This study aimed to assess the extrinsic and intrinsic work motivations in a sample of hospital nurses in Crete-Greece.

**Methods:** A total of 258 nurses from a tertiary public university hospital participated in the study (88% response rate) during 2015. The translation and cultural adaptation of WEIMS was based on the Minimal Translation Criteria of the Medical Outcomes Trust. A total "Work Self-Determination Index (W-SDI)" is also calculated. The internal consistency of the WEIMS's six subscales was assessed and comparisons were made by analysis of variance. Multivariate analysis of covariance was performed to detect any difference in the WEIMS subscales.

**Results:** Items of the 'intrinsic motivation' subscale received the highest scores compared to the other subscales. Reliability of 'Work Self-Determination Index (W-SDI)' main scale rated as 'meritorious' (Cronbach's alpha 0.83) and between the six subscales, the higher mean score was found in intrinsic motivation and the lower in identified regulation (3.70 vs. 2.78,  $p < 0.001$ ). The highest association was noticed between the subscale of "intrinsic motivation" with the W-SDI ( $r = 0.664$ ,  $p < 0.001$ ) but in general, significant associations were noticed between most of the six subscales ( $p < 0.05$ ). Female nurses in relation to counterparts seem to have significantly higher mean scores in 'Intrinsic motivation' (3.73 vs. 3.49,  $p = 0.049$ ), in 'Integrated regulation' (3.28 vs. 2.95,  $p = 0.033$ ) and in 'Amotivation' (3.01 vs. 2.75,  $p = 0.027$ ). Participants also with more working years (21+) in relation to those with less (0-10) had found with higher mean score on the 'Intrinsic motivation' subscale (3.87 vs. 3.43,  $p = 0.027$ ). Nevertheless, the W-SDI score seems to not change between the two main characteristic of the current study sample ( $p > 0.05$ ).

**Conclusions:** The Greek version of the WEIMS questionnaire seems to be a reliable and valid tool to investigate motivation according to the self-determination theory of hospital nurses.

### Keywords

Motivation, Validation study, Translation, Assessment tool.

### Introduction

The nursing profession faces major challenges worldwide, such as the shortage of nurses in most countries, irrespective of their

economic and developmental state [1]. The alarming issue is that most predictions for nursing personnel over the next years highlight the need for more nurses, otherwise health systems may not be able to cope effectively with an increasing and aging population as well as to respond to physical disasters and emerging diseases outbreaks.

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Although nursing profession is very fulfilling, it is labor-intensive and stressful with increased levels of burnout and compassion fatigue, in relation to most non-clinical professions [2]. Recent reviews have concluded that both individual and organizational turnover determinants have not been researched extensively [3,4]. In this context, it is very important to identify those factors that not only drive individuals to enter the nursing profession but also motivate them to stay in the profession because of its direct impact on healthcare delivery and populations' health and well-being.

There are many different theories and, consequently, multiple definitions and psychometrically tested scales for conceptualizing work motivation. These theories can be categorized as need or cognitive theories and focus on the needs, desires, personality traits, work environment, internal or contextual values and principles and the conscious performance of tasks [5]. Broadly speaking, as work motivation are considered the internal and external reasons that make people initiate and sustain work-related behaviours, but also outline the intensity and duration of these behaviors. Ideally, the goals of the individuals and the organizations are aligned [6].

Greece has a well-established public health care system that operates under the Ministry of Health and seven Regional Health Authorities. One of its main characteristics is that it has, longitudinally, one of the lowest nurses/population ratios in OECD countries [7]. The salaries are determined by the central government and therefore each hospital cannot provide additional monetary incentives or rewards. However, nurses have paid leaves for a variety of reasons, including maternity/paternity leave, job security and a pension scheme. Nurses' motivation in the Greek context has been mainly researched using Herzberg's two-factor theory (1968) using a questionnaire developed by Paleologou et al. [8]. Herzberg's theory (1968) proposes that people need to be satisfied to be motivated to work. Still, some factors that cause dissatisfaction need to be addressed by the employers (called hygiene factors, e.g. job security), although they do not lead employees to higher motivation when fulfilled. According to Herzberg's theory, the personnel may also need non-financial incentives, such as responsibilities, autonomy and promotions to be motivated to work [9].

The two-factor theory has gained attention in the public sector because it implies that non-material and non-monetary rewards, such as respect, recognition, the sense of achievement and occupational autonomy are rewards that can motivate individuals during their work [10,11]. Herzberg's theory has shown interesting findings in Greek nurses: among the factors that were related to work motivation in clinical settings, financial incentives were not the priority and the job attributes, co-workers and potential for achievement were the leading motivators [12-15]. These motivating factors that relate to workplace characteristics and the social context, together with the need for personal advancement, affect significantly nurses' work motivation not only in Greece but worldwide [16]. While these results offer important insights into nurses' work motivation in Greece, Herzberg's two-factor theory has been criticized since the factors associated with satisfaction

and dissatisfaction are not fully independent and there is not a clear distinction between them in all working environments. As an example, both salary and career opportunities were related to job motivation in nurses [5].

Taking all these into account, there is a need to introduce new tools in Greece that assess motivational factors based on newer, more comprehensive theories. One of these is the "Self Determination Theory - SDT" [17]. In short, SDT states that motivation is more complex and based on multiple internal and external factors: there is a continuum of work self-determination starting from amotivation (being passive and not interested in work), to fully external motivation, to a mix of external and internal motivation, concluding to fully internal autonomous motivation [18]. The purpose of this study was to translate, adapt, standardize and test the applicability of the "Work Extrinsic Intrinsic Motivation Scale - WEIMS", that is based on STD theory in a sample of hospital nurses in Greece [19].

## Methods

### Participants and Setting

Data collection took place at the University Hospital of Heraklion, Crete, Greece. The total reference population consisted of 411 4-year-university education nurses and of 176 2-year education nursing assistant. Overall, 293 questionnaires were distributed accounting for 50% of the total nurses. Of them, 258 were returned with usable data and were included in the analysis (88.05% response rate). The study was approved by the 7th Health Region of Crete upon an approving decision from the Scientific Council of the University Hospital of Heraklion. All participants provided written informed consent [20,21].

### Translation, Cultural Adaptation and Reproducibility

The scale was translated into the Greek according to the "Minimal Translation Criteria", following four consecutive stages including a forward and backward translation and two reconciliation meetings with thorough discussions [22]. The cultural adaptation was performed by five healthcare professionals (two nurses, two physicians and one psychologist) who worked in the enrolled hospital and were Greek native speakers. Following the aforementioned procedures, the final Greek version of the WEIMS questionnaire emerged.

A pilot study was performed to assess the reproducibility of the Greek version of the questionnaire [23]. The questionnaire was sent via email to the hospital's 'Clinical Nurse Educators' team that consists of a representative sample of 25 nurses from all hospital departments and ten of them participated in the pilot study. Two weeks upon the first completion of the questionnaire, it was redistributed to the same participants, without having prior knowledge that they would have to answer to the same questionnaire again, to avoid the memory effect [24].

### Survey Questionnaire

The "Work Extrinsic Intrinsic Motivation Scale (WEIMS)" was used after permission granted by the corresponding author Dr.

Tremblay [19]. This tool has been previously used in employees in various public and private organizations, army personnel and students [20,21].

The scale consists of six dimensions - subscales with each one containing three 5-point Likert scale (1=strongly disagree, 5=strongly agree) questions: 1) “intrinsic motivation” (items 4, 8, 15); 2) “integrated regulation” (questions 5, 10, 18); 3) “identified regulation” (items 1, 7, 14); 4) “introjected regulation” (items 6, 11, 13); 5) “external regulation” (items 2, 9, 16); and 6) “amotivation” (items 3, 12, 17). Sample items are: “*Why do you do your work?* 2. *For the income it provides me*” and “8. *For the satisfaction I experience from taking on interesting challenges*”. To determine structural validity, exploratory factor analysis (EFA) was applied. Principal component analysis (PCA) and varimax rotation were used, with Kaiser normalization as the rotation method (oblique). The Kaiser-Meyer-Olkin (KMO) coefficient was found 0.88, and Barlett's sphericity test was found to be significant ( $\chi^2=1398.9$ , d.f.=153,  $p<0.001$ ). Each question needed to have a factor pattern coefficient  $> 0.3$  to be included in a specific factor (not showed in a table). Six factors were identified (WEIMS subscales), with eigenvalues  $\geq 1.00$  and an interpretable overall variation of 65.1%. In reproducibility, no significant variation in the six subscales scores and the W-SDI was observed between the first and the second round ( $p>0.05$ ), while in one subscale (“identified regulation”) marginal variation was found ( $p=0.048$ ). Additionally, the correlation coefficients of the score differences between the two time periods were found statistically significant in four subscales ( $p<0.001$ ).

The “Work Self-Determination Index (W-SDI)” can be also calculated from all responses. The algorithm for defining the index is: “W-SDI = (+3 × IM) + (+2 × INTEG) + (+1 × IDEN) + (- 1 × INTRO) + (-2 × EXT) - 3 × AMO”. Possible scores can range  $\pm 24$  for the 5-point Likert scale.<sup>19</sup> Higher positive scores indicate that employees are conscientiously performing their tasks and that they feel linked to their workplace. Age, gender, educational level, working experience and working department of the participants were also measured as control variables.

### Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences (IBM-SPSS, version 25.0.0, 2017, Chicago, Illinois, USA). For each WEIMS subscale, the asymmetry coefficients were calculated since the responses tend to show negative asymmetry [19]. Subsequently, frequency distributions of the participants’ descriptive characteristics were calculated. The internal consistency of the WEIMS’s six subscales was assessed using Cronbach’s  $\alpha$  coefficient and their comparisons with analysis of variance. Multivariate analysis of covariance was performed to detect any difference in the WEIMS’s subscales with the key characteristics of the participants (heterogeneity was tested with Levene’s method). Construct validity was also assessed with Pearson correlations amongst the subscales. The significance level was set at 0.05.

## Results

The descriptive characteristics of the nurses who participated in the study are presented in Table 1. The majority of the participants were females (84.8%), the mean age of all was 41.7 years ( $\pm 7.4$ ), and 81.5% were with higher education level. Most of the participants (45.0%) had been working for 21+ years. The “intrinsic motivation” subscale received the highest score compared to the other subscales. More specifically, the statements “because I derive much pleasure from learning new things” and “for the satisfaction I experience when I am successful at doing difficult tasks” were those that scored higher (3.74).

**Table 1:** Nurses’ descriptive characteristics of the current study (n=258).

		Total n=258	Males n=39	Females n=219
		%		
<b>Age, years</b>	<i>mean age<math>\pm</math>stand.dev.</i>	41.7 $\pm$ 7.4	42.1 $\pm$ 5.8	41.7 $\pm$ 7.7
24-35		27.1	23.1	27.9
36-45		34.9	38.5	34.2
46-55		38.0	38.5	37.9
<b>Education level</b>	<i>high school</i>	18.5	10.3	20.1
	<i>4-year technological institute</i>	72.1	76.9	71.2
	<i>university</i>	4.7	7.7	4.1
	<i>master or PhD</i>	4.7	5.1	4.6
<b>Job experience, years</b>	<i>mean<math>\pm</math>stand.dev.</i>	17.8 $\pm$ 8.3	17.2 $\pm$ 6.7	17.9 $\pm$ 8.6
	<i>0-10</i>	23.6	23.1	23.7
	<i>11-20</i>	31.4	38.5	30.1
	<i>21+</i>	45.0	38.5	46.1

stand.dev., standard deviation; PhD, philosophy diploma.

The “integrated regulation” subscale statement that was rated higher was “because this work is a part of my life” with 67.2% of the participants agreeing or fully agreeing. “Because it allows me to earn money” was the statement that accrued the highest score (3.3) in the “external regulation” subscale. Among the “amotivation” subscale statements, “I don’t know, too much is expected of us” and “I don’t know why, we are provided with unrealistic working” seems to express the majority of the participants (68.2% and 58.9% respectively) (Table 2).

Reliability of W-SDI scale rated as ‘meritorious’ (Cronbach’s alpha 0.83) and ranged among the six WEIMS subscales from 0.59-0.73 (Table 3). Between the six subscales, the higher score was found in intrinsic motivation and the lower in identified regulation (3.70 vs. 2.78,  $p<0.001$ ).

Pearson correlations between the six subscales are shown in Table 4. The highest association was noticed between the subscale of “intrinsic motivation” with the W-SDI ( $r=0.664$ ,  $p<0.001$ ) and followed by the “integrated regulation” with the “identified regulation” ( $r=0.559$ ,  $p<0.001$ ). Similarly, the “amotivation” subscale showed significance to W-SDI ( $r=-0.522$ ,  $p<0.001$ ). In general, significant associations were noticed between most of the six subscales, which are an index of convergent validity. Based on multivariate analysis, female nurses in relation to male seem to have significantly higher mean scores in ‘Intrinsic motivation’

**Table 2:** Score and descriptive characteristics of the Work Extrinsic Intrinsic Motivation Scale's (WEIMS) 18 items of the nurses of the current study.

Subscales and their answers †	Mean	Standard deviation	Median	Correspond or corresponding exactly,%
<b>Intrinsic motivation (IM)</b>				
4. Because I derive much pleasure from learning new things.	3.74	0.83	4.00	70.6
8. For the satisfaction i experience from taking on interesting challenges.	3.61	1.01	4.00	70.2
15. The satisfaction I experience when I am successful at doing difficult tasks.	3.74	0.90	4.00	76.4
<b>Integrated regulation (INTEG)</b>				
5. Because it has become a fundamental part of who I am.	3.14	1.15	3.00	48.4
10. Because it is part of the way in which I have chosen to live my life.	2.96	1.10	3.00	38.7
18. This work is a part of my life.	3.58	0.99	4.00	67.2
<b>Identified regulation (IDEN)</b>				
1. This is the type of work I choose to do to attain a certain lifestyle.	2.26	1.10	2.00	17.1
7. Because i choose this type of work to attain my career goals.	3.12	1.10	3.00	45.9
14. Because it is the type of work i have chosen to attain certain important objectives.	2.97	1.11	3.00	40.3
<b>Introjected regulation (INTRO)</b>				
6. Because I want to succeed at this job, if not I would be very ashamed of myself.	2.78	1.25	2.00	36.4
11. Because I want to be very good at this work, otherwise I would be very disappointed.	3.14	1.21	4.00	53.9
13. I want to be a 'winner' in life.	3.20	1.10	4.00	51.9
<b>External regulation (EXT)</b>				
2. For the income it provides me.	3.09	1.20	4.00	51.9
9. Because it allows me to earn money.	3.33	1.19	4.00	62.6
16. Because this type of work provides me with security.	2.52	1.01	2.00	18.6
<b>Amotivation (AMO)</b>				
3. I ask myself this question don't seem to be able to manage the important tasks related to this work.	1.94	0.80	2.00	5.4
12. I don't know why, we are provided with unrealistic working conditions.	3.38	1.10	4.00	58.9
17. I don't know, too much is expected of us.	3.62	0.98	4.00	68.2

† The question is «why do you do your work?». Responses were rated on a 5-point Likert-type scale ranging from 1 (does not correspond at all) to 5 (corresponds exactly).

**Table 3:** Descriptive and reliability characteristics of Work Extrinsic Intrinsic Motivation Scale's (WEIMS) subscales for the nurses of the current study.

	Mean	Standard Deviation	Median	Minimum	Maximum	Cronbach's α
Intrinsic motivation	3.70	0.70	4.00	1.00	5.00	0.64
Integrated regulation	3.23	0.87	3.30	1.00	5.00	0.73
Identified regulation	2.78	0.85	2.70	1.00	5.00	0.67
Introjected regulation	3.04	0.95	3.00	1.00	5.00	0.73
External regulation	2.98	0.84	3.00	1.00	5.00	0.59
Amotivation	2.97	0.70	3.00	1.00	4.70	0.65
Work self-determination index (W-SDI)	2.40	4.31	3.00	-11.30	13.70	0.83

Analysis of variance between the six components (p<0.001).

**Table 4:** Pearson Correlations for the Work Extrinsic Intrinsic Motivation Scale's (WEIMS) Subscales for the nurses of the current study.

	Work self-determination index	Intrinsic motivation	Integrated regulation	Identified regulation	Introjected regulation	External regulation
	r-Pearson					
Intrinsic motivation	0.664**					
Integrated regulation	0.502**	0.468**				
Identified regulation	0.401**	0.441**	0.559**			
Introjected regulation	0.065	0.430**	0.515**	0.459**		
External regulation	-0.236*	0.121*	0.239*	0.339**	0.314**	
Amotivation	-0.522**	-0.077	0.012	0.057	0.217**	0.039

\* p-value<0.05, \*\* p-value<0.001

**Table 5:** Differences in the Work Extrinsic Intrinsic Motivation Scale's (WEIMS) Subscales between gender and working years in nurses.

	Gender <sup>a</sup>		<i>p</i> -value	Working years <sup>b</sup>			<i>p</i> -value
	Males (n=39)	Females (n=219)		0-10 (n=61)	11-20 (n=81)	21+ (n=116)	
	mean±standard error			mean±standard error			
Intrinsic motivation	3.49±0.11	3.73±0.05	0.049	3.43±0.13	3.65±0.08	3.87±0.09	0.027
Integrated regulation	2.95±0.14	3.28±0.06	0.033	3.02±0.16	3.22±0.10	3.34±0.12	0.186
Identified regulation	2.66±0.14	2.80±0.06	0.340	2.65±0.16	2.82±0.10	2.82±0.11	0.464
Introjected regulation	3.00±0.15	3.04±0.06	0.776	2.73±0.18	3.04±0.11	3.20±0.13	0.081
External regulation	2.85±0.14	3.00±0.06	0.312	2.82±0.16	2.95±0.10	3.08±0.11	0.280
Amotivation	2.75±0.11	3.01±0.05	0.027	2.92±0.13	3.12±0.08	2.90±0.09	0.950
Work self-determination index	2.08±0.70	2.46±0.29	0.616	1.83±0.81	1.92±0.50	3.04±0.58	0.321

<sup>a</sup>Multivariate analysis of covariance. As covariates were used age, education and job experience.  
<sup>b</sup>Multivariate analysis of covariance (polynomial trend). As covariates were used gender, age and education.  
Homogeneity was tested by Levene's test.

(3.73 vs. 3.49,  $p=0.049$ ), in 'Integrated regulation' (3.28 vs. 2.95,  $p=0.033$ ) and in 'Amotivation' (3.01 vs. 2.75,  $p=0.027$ ). Participants also with more working years (21+) in relation to those with less (0-10) had found with higher mean score on the 'Intrinsic motivation' subscale (3.87 vs. 3.43,  $p=0.027$ ) (Table 5). Nevertheless, the W-SDI score seems to not change between the two main characteristic of the currents study sample ( $p>0.05$ ).

## Discussion

This study explored the psychometric properties of the Greek version of WEIMS in a sample of nurses, as well as their motivation to work in line with the self-determination theory. WEIMS-Greek is comparable to the original English version and can be utilized in the Greek context to describe work motivation. Six factors - subscales were identified using exploratory factor analysis in this study, mirroring the original validation by Tremblay and colleagues (2009) in two diverse samples. The associations of the subscales, a measure of construct validity, were positive or negative, as expected [19].

Alpha coefficients suggest adequate internal reliability (0.64-0.73) for the subscales and the "Work self-determination index" (0.83), except for the subscale "External regulation" (0.59). They are comparable to those reported for the original scale in public and private sector employees and a sample of army personnel (Cronbach's alpha 0.64-0.83 and 0.70-0.87, respectively) and to those reported for private employers and students in UK (0.70-0.87) [19,20]. In 4/6 subscales in finance and management employees in Singapore, WEIM's reliability was also comparable [21]. Although a low Cronbach's alpha value may be related to the low number of questions in a scale and there is not a clear cut-off point, it has been suggested that alpha values over 0.70 are desirable [25].

In line with other studies, "intrinsic motivation" was the subscale with the highest score in nurses in this study (or mean 3.7 [26]). This is important because internally motivated employees have better work outcomes. For example, they tend to resolve more efficiently work conflicts resulting from imprecise duties, which are common in clinical settings and overcome faster emotional exhaustion [27].

External monetary incentives came second to internal incentives in this study, as motivating factors. Although they remain an important reason for work, especially during financial crises or periods of high unemployment, previous studies in the Greek context, supported this result [8,14,15,28,29]. Mirroring the results of Abu Yahya and colleagues (2019) some prominent gender differences were found in this study. In multivariate analyses, female nurses had higher intrinsic motivation (3.73 vs 3.49), integrated regulation (3.28 vs 2.95) but also, amotivation (3.01 vs 2.75) in relation to their male counterparts (for all  $p<0.05$ ) [26]. These gender differences in job motivation were not reported in previous research in the Greek context [12,15]. In the culturally similar Greek-Cypriot context, there were gender differences regarding work remuneration [29]. We cannot be sure why gender differences exist now and not a decade earlier. A prominent difference is that during these years Greece has undergone a major financial crisis. In the Greek culture men are supposed to be the main income providers for the family, and the result may be a reflection of this. Male and female gender, as a sociological construct, are associated with different expectations in different cultures and this may impact individual motives and behaviors [30].

Participants with more working years had higher scores on the "Intrinsic motivation" subscale in this study. In Greece, more working years in the same position were related to lower motivation from job attributes, such as control over job decisions, skill development and decision-making but higher motivation from doing a meaningful job and be respected as a person [12,15].

## Strengths and Limitations

Among the major strengths of the present study was that it provides a culturally adapted tool based on the self-determination theory into Greek language. It can be utilized to assess the factors that motivate nurses, considering their key role in providing efficient and high-quality bedside care. One of the study limitations was that the participants were enrolled from one public University hospital. Although participants were of diverse age, educational preparation and working experience, the generalization of the findings beyond this sample should be cautious.

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## Conclusions

In an effort to increase job satisfaction, job retention, and what's more important, improve patient outcomes, it is of paramount importance to understand work motivation in nurses. The Greek version of the WEIMS questionnaire is a reliable and valid tool that can be utilized towards exploring the incentives for work motivation. Different stakeholders need to take into account job motivation for nurses and implement policies towards retaining nurses in public health systems.

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