

# Residency Training: Work engagement during neurology training

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## ABSTRACT

**Objective:** Work engagement, defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption, can ameliorate patient care and reduce medical errors. The purpose of this cross-sectional study was to investigate work engagement among neurology residents in the region of Attica, Greece.

**Methods:** In total, 113 residents participated in this study. Demographic and work-related characteristics, as well as emotional exhaustion and personality traits (neuroticism), were examined via an anonymous questionnaire. Work engagement was measured by the Utrecht Work Engagement Scale.

**Results:** The study sample had a mean age of  $34.6 \pm 3.6$  years, ranging from 26 to 45 years. Sixty-two (54.9%) participants were women and 45 (39.8%) were married. After adjusting for sex, emotional exhaustion, and neuroticism, the main factors associated with work engagement were autonomy and chances for professional development.

**Conclusions:** Providing more chances for trainees' professional development as well as allowing for and supporting greater job autonomy may improve work engagement during neurology training. **Neurology® 2016;87:e45–e48**

## GLOSSARY

**EE** = emotional exhaustion; **EWTD** = European Working Time Directive; **JD-R** = Job Demands–Resources; **UWES** = Utrecht Work Engagement Scale.

Work engagement is an important indicator of occupational well-being for both employees and organizations. Work engagement is characterized by a positive motivational state of dedication (i.e., being strongly involved in one's work and experiencing a sense of inspiration, enthusiasm, and challenge), vigor (i.e., experiencing high levels of energy and mental resilience while working), and absorption (i.e., being fully concentrated and happily engrossed in one's work). Work engagement can ameliorate patient care and reduce medical errors.<sup>1</sup>

Work engagement is considered to be the positive opposite of another core concept in the field of organizational behavior—burnout (i.e., a state of emotional exhaustion [EE], depersonalization, and cynicism toward work, and reduced professional efficacy in response to chronic stressors at work).<sup>2</sup> However, whereas burnout has been extensively studied across different medical specialties in order for investigators to identify its determinants,<sup>3,4</sup> work engagement has been relatively neglected.

The evidence regarding the antecedents and consequences of work engagement can be organized in an overall model. According to the Job Demands–Resources (JD-R) model,<sup>2</sup> job resources such as social support from colleagues and supervisors, chances for professional development, performance feedback, and job autonomy can help employees to achieve work goals, reduce job demands (e.g., workload, emotional demands), and stimulate personal growth. Job resources can start a motivational process that may lead to work engagement and consequently to higher performance. Apart from work-related characteristics, personality factors may influence work engagement and can also shape the way employees perceive their work environment and react to it.

The purpose of this cross-sectional study was to study work engagement among neurology trainees.

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**METHODS Procedure and participants.** Details about the procedure and the participants have been published.<sup>4</sup> In summary, all 131 neurology trainees of the wider area of Athens working in 18 hospitals were invited to participate in the study. The study protocol was approved by the local ethics committee.

**Measures.** Demographic characteristics included sex, age, and marital status. Work-related characteristics included stage of training, compliance with the European Working Time Directive (EWTD), and 8 specific JD-R characteristics, based on the JD-R model and assessed via a 31-item validated questionnaire (autonomy, opportunities for professional development, support from colleagues, supervisor support, workload, intellectual demands, emotional demands, work-home demands interference).<sup>3,4</sup> Each of these items was rated on a 5-point Likert scale, ranging from never to always.

EE, considered as the main aspect of burnout and denoting a sense of being depleted of one's emotional and physical resources, was assessed via the 9-item EE scale from the Maslach Burnout Inventory.<sup>3,4</sup> EE reflects the stress dimension of burnout and may be considered the most obvious manifestation of this complex syndrome.<sup>3,4</sup> Neuroticism (a fundamental personality trait characterized by one's tendency to experience negative affect such as anxiety, fear, sadness, worry, and tension) was examined via a 12-item scale, based on the NEO-Five Factor Inventory.<sup>5</sup> Work engagement was measured with the Utrecht Work Engagement Scale (UWES).<sup>6</sup>

**Statistical analysis.** A database was developed using the statistical software package SPSS (version 16.0 for Macintosh; Chicago, IL). Descriptive statistics were examined for each variable. Correlations between the UWES score and baseline continuous variables were examined using Spearman correlations. Mann-Whitney *U* was used to compare UWES scores between groups. Where statistically significant correlations or differences were found, these variables were entered in a multiple linear regression model in order to examine the relationships between these independent variables and the UWES score (set as the continuous dependent variable). Level of statistical significance was set at 0.05.

**RESULTS** Full data were available for 113 trainees (response rate 86.3%). Table 1 summarizes the demographic and work-related characteristics of the study

sample. Regarding demographic characteristics, the univariate analysis showed that the UWES score did not correlate with age, while the UWES score did not differ significantly between married and unmarried participants. However, women showed higher UWES scores compared to men ( $64.1 \pm 15.8$  vs  $53.4 \pm 23.9$ , Mann-Whitney *U*,  $Z = -2.493$ ,  $p = 0.013$ ).

Regarding work-related characteristics, the univariate analysis showed that the UWES score did not correlate with the stage of training, the latter defined as the remaining months to complete training, while the UWES scores did not differ significantly between trainees exceeding the EWTD limit and trainees who did not. Correlations between the UWES score and the JD-R variables showed that UWES was significantly correlated with supervisor support (Spearman  $\rho = 0.326$ ,  $p < 0.001$ ), home-work demands interference (Spearman  $\rho = -0.245$ ,  $p = 0.009$ ), autonomy (Spearman  $\rho = 0.442$ ,  $p < 0.001$ ), and chances for professional development (Spearman  $\rho = 0.597$ ,  $p < 0.001$ ), but not with social support, workload, or intellectual and emotional demands. Regarding psychological characteristics, the UWES score correlated significantly with both the EE (Spearman  $\rho = -0.546$ ,  $p < 0.001$ ) and the neuroticism score (Spearman  $\rho = -0.249$ ,  $p = 0.008$ ).

Multivariate linear regression analysis was conducted to find the significant variables associated with work engagement. The following independent variables were entered into the model: sex, EE, neuroticism, supervisor support, home-work demands interference, autonomy, and chances for professional development. Table 2 shows that the only variables that appeared to have unstandardized regression coefficients significantly different from zero in predicting work engagement were sex, EE, autonomy, and chances for professional development. According to the standardized  $\beta$  values, EE and chances for professional development were the most potent variables related to work engagement. All variables in the model accounted for 49.8% of the total UWES variability, which is considered to be high.

**DISCUSSION** This cross-sectional study involved all neurology trainees of the wider area of Athens, Greece. The novelty of our study is that it was designed to identify factors related to work engagement during neurology residency training.

An interesting finding in our study was that female neurology trainees were more engaged at work compared to men. Contrary to our findings, a recent study on work engagement in psychiatry residents found that men were more engaged at work compared to women.<sup>7</sup> Moreover, in studies investigating work engagement in medical related fields, such as nurses, no significant difference between the 2 sexes has been found.<sup>8</sup> Similarly, although in our study UWES scores did not differ significantly between married and unmarried participants, marital

**Table 1** Characteristics of the total sample of the study

|   | Total sample (n = 113) |
|---|------------------------|
| <b>Demographics</b>   |                        |
| Age, y, mean (SD)   | 34.6 (3.6)             |
| Male sex, n (%)   | 51 (45.1)              |
| Marital status, n (%)   |                        |
| Single  | 67 (59.3)              |
| Married   | 45 (39.8)              |
| Divorced  | 1 (0.9)                |
| <b>Work-related characteristics</b>                             |                        |
| Months remaining to complete training, mean (SD)                | 18.1 (10.8)            |
| Working hours per day (not including on-call duties), mean (SD) | 7.1 (1.1)              |
| On-calls per month, mean (SD)                                   | 4.7 (1.7)              |
| Days-off per month, mean (SD)                                   | 2.4 (1.7)              |
| EWTD violated, n (%)  | 13 (11.5)              |

Abbreviation: EWTD = European working time directive.

**Table 2** Multiple linear regression analysis with work engagement as the dependent variable and demographic and work-related characteristics as independent variables

| Predictors                           | B <sup>a</sup> | SE    | β <sup>b</sup> | t      | p                  | 95% CI for B <sup>a</sup> |
|--------------------------------------|----------------|-------|----------------|--------|--------------------|---------------------------|
| Sex                                  | −6.082         | 2.931 | −0.148         | −2.075 | 0.040 <sup>c</sup> | −11.895 to −0.270         |
| Emotional exhaustion                 | −0.458         | 0.157 | −0.267         | −2.924 | 0.004 <sup>c</sup> | −0.769 to −0.148          |
| Neuroticism                          | −0.317         | 0.246 | −0.099         | −1.288 | 0.201              | −0.806 to 0.171           |
| Home-work demands interference       | 0.132          | 0.313 | 0.031          | 0.422  | 0.674              | −0.489 to 0.754           |
| Supervisor support                   | 0.607          | 0.318 | 0.142          | 1.908  | 0.059              | −0.024 to 1.237           |
| Autonomy                             | 1.559          | 0.572 | 0.205          | 2.725  | 0.008 <sup>c</sup> | 0.425 to 2.693            |
| Chances for professional development | 2.020          | 0.564 | 0.289          | 3.582  | 0.001 <sup>c</sup> | 0.902 to 3.138            |

Abbreviation: CI = confidence interval.

<sup>a</sup> Unstandardized coefficients.

<sup>b</sup> Standardized coefficients.

<sup>c</sup>  $p < 0.05$ .

status has been associated with work engagement in cancer workers including nurses, radiation therapists, allied health, and medical staff.<sup>9</sup> These findings suggest that demographic characteristics may possibly play a different role in work engagement in diverse study populations and settings.

Our finding that the UWES score did not differ significantly between trainees exceeding the EWTD limit and trainees who did not is in line with previous research,<sup>9</sup> but stands in contrast to those reported by other studies that have found that hours worked per week is positively associated with work engagement in registered nurses.<sup>10</sup> Again, job-related and study population characteristics may contribute to variations between study results.

After having adjusted for sex, EE, and neuroticism, we showed that the main factors related to work engagement were autonomy and chances for professional development. Both these variables are considered to be job resources and both may help trainees to become skilled specialists. Autonomy provides young doctors with the necessary independence—appropriate to their level of expertise—in managing a patient clinically. Similarly, opportunities for professional development may increase work engagement. Interestingly, this variable has not only been the strongest factor positively related to work engagement, but it has also been found to be the most significant attenuation determinant of burn-out.<sup>4</sup> The direct characteristics of the residents' mentors (including the structure of supervision and the time spent with mentees) were not evaluated in this study. Future research might explore their role in achieving work engagement.

No significant relationship was found between work engagement and neuroticism. This can be explained by the strong relationship between neuroticism and another independent variable introduced in the regression analysis, exhaustion. We acknowledge as a limitation of our study the fact that we have not examined the role of

additional personality traits (e.g., extraversion, conscientiousness) or low-order individual factors (e.g., optimism, self-efficacy) that may function as personal resources. Future studies need to examine the role of these factors in achieving work engagement.

Given that work engagement is characterized by a high level of energy and strong identification with one's work, it was not unexpected that a strong and significant negative relationship was found between work engagement and EE. The present study emphasized the inherently motivational qualities of engagement that foster residents' willingness to dedicate their efforts and abilities to the work task.

Our results shed light on some significant parts of training in neurology, where, apart from gaining clinical experience, trainees are in need of having autonomy in their daily practice, along with the appropriate supervision. Open-minded clinical teachers and mentors should help residents to professionally develop further skills and have more chances for professional development. Organizational-level interventions may focus on increasing job resources by redesigning the work environment or through training. Improving work engagement is important for both young doctors and patients, as the latter will receive better quality of care.

## AUTHOR CONTRIBUTIONS

Panagiotis Zis: drafting/revising the manuscript, study concept and design, data collection, statistical analysis, accepts responsibility for conduct of research and final approval. Artemios K. Artemiadis: drafting/revising the manuscript, data collection, accepts responsibility for conduct of research and final approval. Fotios Anagnostopoulos: drafting/revising the manuscript, study concept and design, accepts responsibility for conduct of research and final approval.

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## DISCLOSURE

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