JSR
Journal of Surgical Research

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Association for Academic Surgery

Goal orientation in surgical residents: a study of the motivation behind learning

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ARTICLE INFO

ABSTRACT

Background: The subconscious way in which an individual approaches learning, goal orientation (GO), has been shown to influence job satisfaction, job performance, and burnout in nonmedical cohorts. The aim of this study was to adapt and validate an instrument to assess GO in surgical residents, so that in the future, we can better understand how differences in motivation affect professional development.

Materials and methods: Residents were recruited to complete a 17-item survey adapted from the Patterns of Adaptive Learning Scales (PALS). The survey included three scales assessing GO in residency-specific terms. Items were scored on a 5-point Likert scale, and the psychometric properties of the adapted and original PALS were compared.

Results: Ninety-five percent of residents (61/64) participated. Median age was 30 y and 33% were female. Mean (standard deviation) scale scores for the adapted PALS were: mastery 4.30 (0.48), performance approach (PAP) 3.17 (0.99), and performance avoid 2.75 (0.88). Mean (standard deviation) scale scores for the original PALS items were: mastery 3.35 (1.02), PAP 2.76 (1.15), and performance avoid 2.41 (0.91). Cronbach alpha were $\alpha = 0.89$ and $\alpha = 0.84$ for the adapted PAP and avoid scales, respectively, which were comparable with the original scales. For the adapted mastery scale, $\alpha = 0.54$. Exploratory factor analysis revealed five factors, and factor loadings for individual mastery items did not load consistently onto a single factor.

Conclusions: This study represents the first steps in the development of a novel tool to measure GO among surgical residents. Understanding motivational psychology in residents may facilitate improved education and professional development.

1. Introduction

The subconscious way in which an individual approaches a learning task, known as goal orientation (GO), has been shown to influence job satisfaction, job performance, and burnout in nonmedical cohorts [1—3]. There are three subtypes of GO: mastery orientation (MG), in which learners strive to attain competence; performance approach (PAP) orientation, in which learners strive to demonstrate competence; and performance avoid (PAV) orientation, in which learners strive to avoid demonstrating incompetence. For the PAV-oriented person, the prospect of potential failure is likely to elicit anxiety, encourage self-protective withdrawal, and disrupt concentration and task involvement [4,5]. In addition,

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neuroticism and emotional instability have been negatively correlated with performance orientations [6].

GO can be used to understand and predict how people will respond when faced with concrete achievement situations. Because surgical residents face such situations daily, whether in the operating room, taking a written or oral examination, or engaging in feedback, studying GO may be particularly useful in this population. For example, the mastery-oriented resident may view technical ability as something that can be improved with effort and persistence, believe that effort leads to success, and view feedback as useful information about how to correct errors and develop competency. The performance-oriented resident, however, may believe that the ability is fixed and exert a tremendous amount of effort to compensate for low ability. This resident may view specific negative feedback as an overall judgment of one's competency, which can be particularly devastating and nonproductive [7].

Although both a mastery- and performance-oriented resident may exhibit competency, the notable difference may be in the deleterious long-term effects on an individual's persistence, or lack thereof, in the face of failure and task choice [4]. Further emphasizing the importance of the GO construct, studies in both airline pilots and surgeons have found that self-regulation and self-monitoring during complex decision making rely on an understanding of one's own internal emotions juxtaposed with external environmental factors [8,9]. Therefore, the ability of a resident to understand his or her own GO might enhance their development of more safe, patient oriented, and educational operative experiences. Similarly, an increased awareness of and sensitivity to different types of motivational behavior in the learning environment by medical educators may help to enhance the development of leadership, team building, self-assessment, and job performance skills [10].

With the understanding that GO may be an important construct to study among surgical residents, it is important to identify a reliable and valid method of assessing this construct in medical cohorts. Relying on behavioral observations alone is not sufficient, as both a mastery- and performance-oriented resident may exert the same degree of engagement to prove task competency. In addition, individuals may manifest various combinations of GO depending on the situation. Because of this, the best way to study GO is to use self-report measures. Although the measures of GO exist, they have not yet been adapted and validated for use in medical cohorts.

To facilitate future study of the potential importance of GO among surgical residents, we sought to adapt and validate a well-studied GO instrument for use in the surgical resident population to begin to understand the subconscious way in which surgical residents approach tasks associated with professional development.

2. Methods

2.1. Study population and setting

This study was deemed exempt from ongoing review by the Institutional Review Board of the University of Pennsylvania. After 2013 American Board of Surgery In-Training Examination, 64 residents enrolled in a university-based surgical residency program were recruited to complete a 17-item survey designed to test GO. The study population included both categorical and preliminary surgical residents who were representative of 11 countries and 16 different states. Participants reviewed a written study description, and inclusion was voluntary. Residents were made aware that their participation would not affect their status within the program.

2.2. Educational setting

The sponsor hospital is a large (772-bed) urban, university-based hospital with approximately 37,000 admissions annually, 1135 residents and fellows and 182 surgical faculty. Educational conferences include twice weekly departmental faculty-led didactics (one of which is a SCORE-based conference) [11], weekly morbidity and mortality conference, monthly grand rounds and supplemental service-based conferences. All residents (100%) complete a research fellowship after the third clinical year.

2.3. Scale development

The Patterns of Adaptive Learning Scales (PALS) was developed by educational psychologists to examine the relationship between the learning environment and students' motivation, affect and behavior among school-aged children [12]. Our survey instrument was adapted for use in graduate surgical education using a subset of the PALS. The adapted PALS included three scales assessing students' personal achievement GO (mastery, PAP, and PAV GO) in residency-specific terms (Table 1). For instance, when the original PALS referenced "class work," "students," and "teachers," the adapted PALS was translated into "situations," "residents," and "attendings."

2.4. Data collection

Study data were collected and managed using the Research Electronic Data Capture tool hosted at the University of Pennsylvania. Research Electronic Data Capture is a secure, web-based application designed to support data capture for research studies, providing: (1) an intuitive interface for validated data entry; (2) audit trails for tracking data manipulation and export procedures; (3) automated export procedures for seamless data downloads to common statistical packages; and (4) procedures for importing data from external sources [13].

2.5. Analytic strategy

Items were scored on a 5-point Likert scale (1 = not at all true, 3 = somewhat true, and 5 = very true), and scale scores were determined by averaging the scores for each item (Table 1). To determine if the adapted PALS was a valid measure of GO among surgical residents, the psychometric properties of the adapted PALS were compared with those of the original PALS using exploratory factor analysis and calculating Cronbach alpha for each of the three subscales.