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Grit as a predictor of risk of attrition in surgical residency

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ABSTRACT

Background: Grit, a measure of perseverance, has been shown to predict resident well-being. In this study we assess the relationship between grit and attrition.
Methods: We collected survey data from residents in a single institution over two consecutive years. All residents in general surgery were invited to participate (N = 115). Grit and psychological well-being were assessed using validated measures. Risk of attrition was measured using survey items.
Results: 73 residents participated (63% response rate). Grit was positively correlated with general psychological well-being ($r = 0.30$, $p < 0.05$) and inversely correlated with depression ($r = -0.25$, $p < 0.05$) and risk of attrition ($r = -0.37$, $p < 0.01$). In regression analyses, grit was positively predictive of well-being ($B = 0.77$, $t = 2.96$, $p < 0.01$) and negatively predictive of depression ($B = -0.28$ $t = -2.74$, $p < 0.01$) and attrition ($B = -0.99$, $t = -2.53$, $p < 0.05$).
Conclusions: Attrition is a costly and disruptive problem in residency. Grit is a quick, reliable measure which appears to be predictive of attrition risk in this single-institution study.

1. Introduction

Surgical residency is a stressful and grueling period in medical training. Surgery residents experience burnout and depression to a greater degree than do members of the general public.[1] The long hours,[2] lack of control over one's schedule, and acuity of patients are all factors that may make residency training particularly challenging. For these and other reasons, the attrition rate in general surgery is higher than that of other specialties at approximately 20%.[3–6]

Attrition is costly to both individuals and the programs in which they matriculate.[7] Previous research has shown that fatigue[8] and poor well-being, such as depression, may be contributors to attrition.[9,10] Specifically, those who have more positive feelings are less likely to quit their jobs and experience burnout.[10,11] Conversely, workplace stress is associated with absenteeism and reduced productivity.[9] Thus, it may be that improving resident well-being can improve retention.

Grit, defined as perseverance and passion for long-term goals,[12] may also be associated with lower rates of attrition. This could happen in two ways. First, previous data has suggested that grit is positively associated with psychological well-being[13] which may thus in turn be associated with lower rates of attrition. Second, grit may directly make it less likely that someone would quit residency.

In this study, we aim to understand whether grit, in and of itself, may be a predictor of one's desire to quit residency. In addition, we aim to replicate prior findings that have shown a positive correlation between grit and psychological well-being. We hypothesize that grit will be positively associated with psychological well-being and that it will be a predictor of risk of attrition.

2. Materials & Methods

After obtaining approval from the Stanford University Institutional Review Board, in the context of a larger longitudinal study we administered a survey to assess residents' perseverance, burnout, psychological well-being, depression, and risk of attrition. The Short Grit Scale[14] was used to measure perseverance. Burnout was measured using the Maslach Burnout Inventory (MBI).[15,16] Psychological well-being was measured using the Dupuy Psychological General Well-Being (PGWB) scale.[17] Depression was measured using the short form of the Beck Depression Inventory (BDI).[18] Risk of attrition was measured using two items: "At this point in time, how likely is it that you will complete residency training in your current

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specialty?" and "In the past month, how often have you thought about leaving your current residency program?" These two items have face validity as measures of risk of attrition but have not undergone explicit validation studies. We also measured true attrition as residents left training during the period of the study.

Residents in the general surgery program (including preliminary residents going into orthopedics, plastic surgery, urology, neurosurgery and those who were non-designated preliminary residents; N = 115) were invited to participate in the study in the spring of 2014 and the spring of 2015. Participants were recruited during mandatory department education meetings. Some participants responded to both surveys. Rather than including these individuals in analyses twice, we retained data from their first set of responses only.

Our analytic strategy was to combine data from all three types of residents (categorical general surgery, designated preliminary residents, and non-designated preliminary residents) for outcome measures which showed no differences by group. This was the case for all measures except for the item regarding likelihood of completing residency. On this item, non-designated preliminary residents had significantly lower scores than did either categorical general surgery or designated preliminary residents. Given that the non-designated preliminary residents had only temporary contracts, this would be expected. Analyses regarding this item included only categorical general surgery and preliminary residents. Data were analyzed using correlations and linear regression analyses in Stata 10.1.

3. Results

3.1. Well-being

Seventy-three unique residents participated (63% response rate) in the study. Table 1 shows the demographic data for the participants. We first analyzed the descriptive data. We then sought to understand the relationship between grit and well-being. The relationships we found were consistent with our hypotheses. As shown in Fig. 1, we found that there was a significant positive association between grit and general psychological well-being ($r = 0.30$, $p < 0.05$). Figs. 2 and 3 show that there was a significant negative association between grit and the depersonalization scale of the MBI ($r = -0.24$, $p = 0.05$) as well as the BDI ($r = -0.25$, $p < 0.05$). There was no significant association between grit and the emotional exhaustion scale of the MBI ($r = -0.21$, $p = 0.09$).

In regression analyses, controlling for age, gender, ethnicity, and marital status, we found that grit was a significant positive predictor of general psychological well-being (B = 0.77, $t = 2.96$, $p < 0.01$). Grit was not a significant predictor of depersonalization (B = −0.57, $t = -1.33$, $p = 0.19$) or emotional exhaustion (B = −0.76, $t = -1.82$, $p = 0.08$). Grit was significantly negatively predictive of depression (B = −0.28, $t = -2.74$, $p < 0.01$). For both general psychological well-being and depression, gender was also a significant predictor (B = −0.59, $t = -2.65$, $p < 0.05$; B = 0.18, $t = 2.10$, $p < 0.05$, respectively) such that women were associated with lower general psychological well-being and higher levels of depression than men. (This association was only found in these regressions. Direct comparisons [t tests] did not reveal a significant difference in any well-being measure by gender.) The interaction terms (gender x

Table 1
Demographic data.[a]

Gender	Number (%)
Male	42 (58)
Female	31 (42)
Post-graduate year (PGY)	
PGY 1	45 (62)
PGY 2	10 (14)
PGY 3	9 (12)
PGY 4	4 (5)
PGY 5	2 (3)
Research	3 (4)
Marital Status	
Married	27 (42)
Widowed	0 (0)
Divorced	3 (5)
Separated but married	0 (0)
Single, never married	34 (53)
Ethnicity	
White	33 (52)
Black or African-American	1 (2)
Hispanic or Latino	3 (5)
Native American	0 (0)
Middle Eastern	0 (0)
Asian/Pacific Islander	23 (37)
Mixed Race	3 (5)
Other	0 (0)
Specialty	
Categorical General Surgery	32 (52)
Designated Preliminary Resident	22 (36)
Non-Designated Preliminary Resident	7 (11)

[a] Not all totals add up to 73 because not all participants answered all demographic questions.

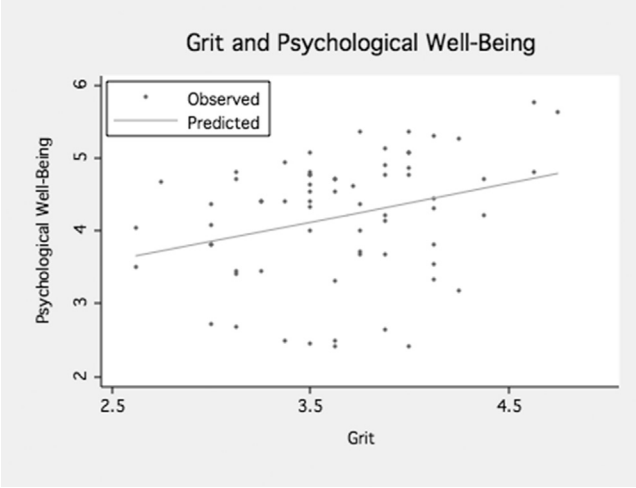

Fig. 1. The relationship between grit and psychological well-being.

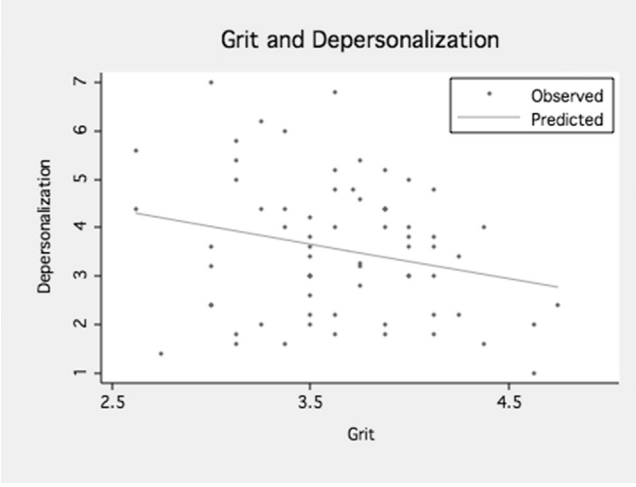

Fig. 2. The relationship between grit and depersonalization.