

ORIGINAL RESEARCH

Association of “Grit” and Satisfaction in Rural and Nonrural Doctors

Alex J. Reed, PsyD, MPH, David Schmitz, MD, Ed Baker, PhD, Ayaka Nukui, MHS, and Ted Epperly, MD

Background: One potential psychological construct, grit, may help to explain the non-cognitive traits that account for both rural physician satisfaction and retention. We investigated (1) the psychological construct grit among rural and non-rural primary care/specialty care physicians, (2) satisfaction levels and (3), the relationship between the psychological construct grit and satisfaction across combinations of rural/non-rural and primary care/specialty care physicians.

Methods: We mailed a cross-sectional questionnaire to 2126 active members of the Idaho Medical Association and Idaho Academy of Family Physicians measuring their self-reported level of grit, satisfaction level and area of specialty.

Results: We received responses from 564 physicians (26.5%). Idaho physicians have relatively uniform levels of grit independent of specialty or practice location. Specialty care physicians reported significantly higher levels of ambition, regardless of practice location. Most physicians were satisfied with their practice (91.7%). Specialty care physicians reported a significantly higher difference in their levels of satisfaction with their practice compared to primary care physicians.

Conclusions: Idaho primary care and specialty care physicians in both rural and non-rural settings reports themselves as individuals who work hard, persevere despite setbacks, and are ambitious. Furthermore, Idaho physicians are satisfied with their current practices. (J Am Board Fam Med 2012;25: 832–839.)

Keywords: Grit, Job Satisfaction, Medical Specialty, Primary Health Care

The American Academy of Family Physicians released a report in September 2006 that suggested that Idaho, along with Nevada, Arizona, Florida, and Texas, would experience serious shortages of family physicians by 2020.¹ Currently, Idaho already is experiencing physician shortages, and the Idaho Health Workforce profile identified Idaho as ranking 49th of 50 states in physicians per capita.²

Although many family physicians practicing in Idaho do so in rural areas, access to physicians remains limited. These rural areas experience significant challenges in both recruiting and retaining family physicians.³

Rural communities throughout the United States are eager to recruit and retain family physicians. Workforce shortages, hospital closures, and declining services have created an uncertain future for doctors considering a career in rural medicine.⁴ Moreover, rural family physicians have reported increased workload and professional isolation as two of the factors that have led them to experience work dissatisfaction, leave rural family practice, or both.⁵

Numerous strategies have been employed to increase retention rates of rural family physicians, including increasing the number of locums available, providing specific skills training, enhancing community appeal, and instigating multidocor communities.⁵ For example, the Community Apgar Questionnaire was designed to help communities

This article was externally peer reviewed.

Submitted 10 February 2011; revised 14 May 2012; accepted 21 May 2012.

From the Family Medicine Residency of Idaho (AJR, DS, TE); and the Center for Health Policy, Boise State University (EB, AN), Boise, Idaho.

Funding: This research was funded by the Idaho Department of Health and Welfare, Office of Rural Health and Primary Care (contract HC596600) through a grant from the U.S. Department of Health and Human Services, Health Resources and Services Administration.

Conflict of interest: none declared.

Corresponding author: Alex J. Reed, PsyD, MPH, 777 North Raymond Street, Boise, ID 83704 (E-mail: alex.reed@fmridaho.org).

assess their relative strengths and weaknesses and to gain a better understanding of which factors are seen as most important from the physician's point of view.⁶ Although these are important strategies to consider for retaining rural family physicians, by using these strategies one assumes that all rural doctors and their communities are capable of changing their behavior to comply.⁴ This concern has led to an increasing area of research, namely, understanding the psychological characteristics of rural physicians who are satisfied with their practice and remain in their communities. Previous research has found that rural family physicians are highly self-directed, caring, cooperative, objective, and persistent.⁴ Rural family physicians who tended to leave rural practice because of dissatisfaction had higher avoidance of harm than those family physicians intent on staying.⁴ Recent research also has found that rural family physicians differ in their levels and profile of temperament and character traits when compared with urban family physicians.⁷ Rural family physicians also have demonstrated higher levels of curiosity, impulsivity, and enthusiasm and lower levels of relaxation, confidence in uncertain situations, and optimism when compared with urban family physicians.⁷ Additional research has suggested that career satisfaction for rural physicians is associated with being able to cope with stress when handling a wide variety of clinic conditions largely on their own.⁸

One potential psychological construct, "grit," may help to explain the noncognitive traits that account for both the satisfaction and retention of rural physicians. Grit is defined as perseverance and passion for long-term goals, working strenuously toward challenges, and maintaining effort and interest over the years despite failure, adversity, and plateaus in progress.⁹ Whereas disappointment or boredom signals to others that it is time to change trajectory and cut losses, the gritty individual stays the course.⁹ For example, research has suggested that grittier individuals make fewer career changes than less gritty individuals.⁹ Moreover, grit was a better predictor of retention of cadets at West Point after the first summer than either self-control or a summary measure of cadet quality used by the West Point Administration Committee.⁹ The developers of this construct have suggested that grit may be as essential as intelligence quotient to high achievement, and grit, more than self-control or conscientiousness, may set apart the exceptional individuals who make maximal use of their abilities.⁹

To date, no reported studies have examined the trait of grit or have used the Grit Scale in any medical setting or with any medical professionals. Consequently, rural and nonrural primary care and specialty care physicians' self-reported levels of grit are not currently known. Furthermore, the medical training of physicians (eg, primary care vs specialty care), their location of practice, and consideration of the psychological construct of grit may help identify those physicians who may be more likely to be satisfied in their practices.

Research Questions

The following questions were examined in this study:

1. Do Grit Scale and subscale scores vary between rural and nonrural physician categories?
2. Do Grit Scale and subscale scores vary between primary care and specialty care physicians?
3. Do Grit Scale and subscale scores vary between combinations of rural/nonrural and primary care/specialty care physician categories?
4. Do satisfaction levels vary between rural and nonrural physicians regardless of their practice category?
5. Do satisfaction levels vary between primary care and specialty care physicians regardless of practice setting?
6. Is there a relationship between satisfaction and Grit Scale and subscale scores regardless of practice setting or medical specialty?

Methods

The target populations for the Grit Survey were physicians (MD or DO, licensed in the state of Idaho) who were either members of the Idaho Academy of Family Physicians (IAFP) or the Idaho Medical Association (IMA). The membership rates at the time of this study were 84% for the IAFP and 79% for the IMA. The IAFP was the primary contact with family physician members for all correspondence related to this research. The IMA was the primary contact with all non-IAFP IMA physician members for all correspondence related to this research. Physician members of the IAFP and IMA whose practice locations were in a county with a population of fewer than 50,000 people were defined as rural physicians, and physician members of the IAFP and IMA whose practice locations were in

a county with a population of more than 50,000 people were defined as nonrural physicians. Thirty-eight of 44 counties in Idaho were defined as rural, although 2 of the other 6 counties are located in the Boise-Nampa metropolitan statistical area, which had a population of nearly 620,000 in the 2010 census and is the 86th largest population area in the United States. IAFP membership considers 158 of its members (35%) to be rural and 294 (65%) as nonrural, whereas the IMA membership includes 566 rural members (28.5%) and 1422 nonrural members (71.5%). Physician members self-identified their medical specialty/training as either primary care (family medicine, internal medicine, emergency medicine, or pediatrics) or specialty care (medical subspecialty, obstetrics/gynecology, general surgery, psychiatry, other surgery subspecialty). The physicians were mailed a 20-item questionnaire that contained the 17-item Grit Scale and 3 questions about medical specialty, completion of a fellowship, and satisfaction with practice in the winter of 2009.

The Grit Scale used in this study consists of 17 questions that measure trait levels of perseverance and passion for long-term goals.⁹ Question responses are rated on a 5-point scale from 1 (not at all like me) to 5 (very much like me) for 10 of the questions and 5 (not like me at all) to 1 (very much like me) for the other 7 questions. The maximum possible mean score for grit is 5. The Grit Scale also includes 4 subscales: Consistency of Interest, Perseverance of Effort, Ambition, and the Brief Grit Scale. The Consistency of Interest subscale includes items to tap into the ability to sustain effort in the face of adversity (eg, "I have overcome setbacks to conquer an important challenge").⁹ The Perseverance of Effort subscale includes items to assess the ability to maintain consistency of interests (eg, "I often set goals but later choose to pursue a different one").⁹ The trait "grit" is measured by averaging the scores of the Consistency of Interest and Perseverance of Effort subscales. The trait "ambition" is measured using the Ambition subscale and includes items to identify how driven one may be to succeed or to make a difference in the world (eg, "I aim to be the best in the world at what I do").⁹ The Brief Grit Scale is an abbreviated form of the Grit Scale. Questions in the instrument are scrambled to diminish the chances a respondent could "guess" which questions measure a particular subscale. The maximum mean score for each of the subscales is 5.

The Grit Scale has demonstrated high internal consistency ($\alpha = 0.85$) for the overall scale for people older than 25 years of age and for each factor (Consistency of Interests, $\alpha = 0.84$; Perseverance of Effort, $\alpha = 0.78$). In addition, the authors of the Grit Scale conducted several studies that demonstrated its predictive validity.⁹ The authors of the Grit Scale gave permission to use it for this study.

The survey was sent successfully by mail to a total of 2126 physicians. IMA and IAFP physicians were sent an E-mail before the survey, an E-mail on the day the survey was mailing, and a reminder E-mail to complete the survey.

Independent *t* tests were performed to determine the statistical significance of relationships among Grit Scale, subscales, medical training, and practice location. A one-way analysis of variance and Bonferroni post hoc multiple comparisons were conducted to compare means of the Grit Scale and subscales with 4 different combinations of medical training and practice location. χ^2 Tests were performed to examine relationships between levels of satisfaction and medical training, practice location, and combinations of both. Independent *t* tests were used when comparing Grit Scale and subscale scores with levels of satisfaction among Idaho physicians. The study was approved by the Boise State University Institutional Review Board.

Results

Five hundred sixty-four physicians returned the questionnaire, yielding a response rate of 26.5%. The response rate of rural physicians was 30.5% (151 of 495), and that of nonrural physicians was 25.3% (413 of 1631). Of the total respondents, 151 (26.8%) were rural physicians and 413 (73.2%) were nonrural physicians. Of those who indicated their medical specialty ($n = 561$), 256 (45.4%) and 305 (54.1%) were categorized as primary and specialty care physicians, respectively. The IAFP includes 158 rural members (35%) and 294 nonrural members (65%), whereas the IMA includes 566 rural members (28.5%) and 1422 nonrural members (71.5%). A total of 87 responding physicians (15.5%) were rural primary care physicians; 64 (11.4%) were rural specialty care physicians; 169 (30.0%) were nonrural primary care physicians; and 241 (42.7%) were nonrural specialty care physicians. The most common medical specialty was family medicine ($n = 189$), followed by medical

Table 1. Grit Scales and Subscales by Practice Location and Medical Training

Scale/Subscale	Practice Location				<i>t</i>	<i>df</i>	<i>P</i>
	Rural		Nonrural				
	No.	Mean (SD)	No.	Mean (SD)			
Grit	141	3.30 (0.32)	398	3.29 (0.34)	-0.25	537	.81
Consistency of interest	146	2.38 (0.60)	406	2.40 (0.61)	0.38	550	.70
Perseverance of effort	145	4.18 (0.41)	401	4.19 (0.48)	0.05	544	.96
Brief grit	146	3.21 (0.32)	400	3.25 (0.33)	1.22	544	.22
Ambition	148	3.56 (0.44)	407	3.55 (0.50)	-0.25	553	.80

Scale/Subscale	Medical Training				<i>t</i>	<i>df</i>	<i>P</i>
	Primary		Specialty				
	No.	Mean (SD)	No.	Mean (SD)			
Grit	246	3.27 (0.32)	290	3.31 (0.34)	1.25	534	.21
Consistency of interest	251	2.43 (0.62)	298	2.37 (0.59)	-1.08	547	.28
Perseverance of effort	249	4.11 (0.49)	294	4.24 (0.42)	3.46	541	.001
Brief grit	250	3.25 (0.31)	293	3.24 (0.35)	-0.16	541	.88
Ambition	252	3.45 (0.49)	300	3.63 (0.46)	4.43	550	<.001

SD, standard deviation.

subspecialty (n = 134), other surgical subspecialty (n = 100), internal medicine (n = 46), obstetrics/gynecology (n = 40), emergency medicine (n = 27), pediatrics (n = 27), and psychiatry (n = 27). Examples of medical subspecialty include radiology (n = 15), dermatology (n = 12), cardiology (n = 10), gastroenterology (n = 10), and sports medicine (n = 9). Examples of surgical subspecialty include orthopedics (n = 36), ophthalmology (n = 15), otolaryngology (n = 10), urology (n = 8), and anesthesiology (n = 7). Of the responding physicians, 34% (183 of 539) indicated that they have completed a fellowship in their area of specialty.

Table 1 provides statistical results of the independent *t* tests for the Grit Scale, subscales, medical

training, and practice location. Both rural and non-rural physicians reported similar levels of overall grit (mean, 3.30 [standard deviation, 0.32] and 3.29 [0.34], respectively). Primary care and specialty care physicians also reported similar levels of overall grit (3.27 [0.32] and 3.31 [0.34], respectively). Specialty care physicians demonstrated a significantly higher level of perseverance of effort (4.24 [0.42]) than primary care physicians (4.11 [0.49]; $t[541] = 4.25$; $P = .001$). Specialty care physicians also reported a significantly higher level of ambition (3.63 [0.46]) than primary care physicians (3.45 [0.49]; $t[550] = 4.43$; $P < .001$).

Table 2 provides statistical results of the analysis of variance and Bonferroni post hoc multiple com-

Table 2. Grit Scales and Subscales by Practice Location and Medical Training

Scale/ Subscale	Rural Primary		Rural Specialty		Nonrural Primary		Nonrural Specialty		<i>F</i>	<i>P</i>
	No.	Mean (SD)	No.	Mean (SD)	No.	Mean (SD)	No.	Mean (SD)		
Grit scale	81	3.29 (0.35)	60	3.30 (0.28)	165	3.26 (0.31)	230	3.31 (0.36)	0.68	.57
Consistency of interest	84	2.39 (0.65)	62	2.35 (0.52)	167	2.44 (0.60)	236	2.37 (0.61)	0.52	.67
Perseverance of effort	83	4.14 (0.43)	62	4.23 (0.38)	166	4.09* (0.52)	232	4.25* (0.44)	4.25	.006
Brief grit	84	3.23 (0.34)	62	3.20 (0.30)	166	3.25 (0.29)	231	3.25 (0.36)	0.60	.61
Ambition	85	3.51 (0.45)	63	3.63 [†] (0.42)	167	3.42* [†] (0.51)	237	3.63* (0.47)	7.12	<.001

Means with the same superscripts symbols (*nonrural; †rural vs. nonrural) are significantly different at $P < .05$ based on Bonferroni post hoc comparisons. SD, standard deviation.

Table 3. Cross-Tabulation of Satisfaction Level and Practice Location

Satisfaction Level	Practice Location		χ^2	OR (95% CI)	P
	Rural	Nonrural			
Very satisfied/satisfied	129 (132.1)	372 (368.9)	1.23	1.44 (0.75–2.77)	.27
Very unsatisfied/unsatisfied	15 (11.9)	30 (33.1)			

Values provided are group frequencies. Expected frequencies if the null hypothesis was true appear in parentheses. OR, odds ratio; CI, confidence interval.

parisons for comparing means of the Grit Scale and subscales with 4 different combinations of medical training and practice location. A statistically significant difference was found across multiple comparisons of the Perseverance of Effort subscale ($F[3,539] = 4.25; P = .006$) and of the ambition subscale ($F[3,548] = 7.12; P < .001$) among rural primary, rural specialty, nonrural primary, and nonrural specialty care physicians. Further analysis revealed that nonrural specialty care physicians demonstrated a significantly higher level of perseverance of effort (mean, 4.25 [standard deviation, 0.44]) than nonrural primary care physicians (4.09 [0.52]; $P = .005$). Nonrural specialty care physicians also reported a significantly higher level of ambition (3.63 [0.47]) than nonrural primary care physicians (3.42 [0.51]; $P < .001$). Rural specialty care physicians also had a significantly higher level of ambition (3.63 [0.42]) than nonrural primary care physicians (3.42 [0.51]; $P = .020$).

Tables 3 and 4 provide statistical results of the χ^2 tests to examine relationships between levels of satisfaction and medical training, practice location, and combinations of both. Satisfaction responses were collapsed into 2 categories—satisfied and unsatisfied—for the analysis purpose. The very satisfied and satisfied categories were collapsed into the satisfied category, whereas the very unsatisfied and unsatisfied categories were collapsed into the unsatisfied category. Nonrural physicians reported

similar levels of satisfaction (92.4%) to those of rural physicians (89.4%). Satisfaction levels did not have any significant relationship with practice location ($n = 546; \chi^2 = 1.23; P = .27$). A statistically significant difference ($n = 546; \chi^2 = 5.17; P = .023$) was found between the satisfaction rates of primary care physicians (88.7%) compared with specialty care physicians (94.1%), and specialty care physicians were found to be twice as likely to be satisfied or very satisfied than primary care physicians.

Table 5 provides statistical results of the independent t tests comparing Grit Scale and subscale scores with levels of satisfaction among Idaho physicians. Both satisfied and unsatisfied physicians reported the same levels on the grit scale (mean, 3.29 [standard deviation, 0.33] and 3.29 [0.31], respectively) and similar levels on the brief grit scale (3.24 [0.32 and 3.27 [0.46], respectively). Moreover, satisfied and unsatisfied physicians report similar levels for the Consistency of Interest subscale (mean, 2.39 [0.60] and 2.52 [0.52], respectively), the Perseverance of Effort subscale (4.19 [0.46] and 4.06 [0.47], respectively), and the Ambition subscale (3.55 [0.48] and 3.48 [0.55], respectively).

Discussion

In Idaho, both nonrural and rural physicians in primary care and specialty care reported themselves

Table 4. Cross-Tabulation of Satisfaction Level and Medical Training

Satisfaction Level	Medical Training		χ^2	OR (95% CI)	P
	Primary	Specialty			
Very satisfied/satisfied	222 (229.3)	276 (268.7)	5.17	2.05 (1.09–3.84)	.023
Very unsatisfied/unsatisfied	28 (20.7)	17 (24.3)			

Values provided are group frequencies. Expected frequencies if the null hypothesis was true appear in parentheses. OR, odds ratio; CI, confidence interval.

Table 5. Grit Scales and Subscales by Satisfaction Levels

Scale/Subscale	Satisfaction Level				<i>t</i>	<i>P</i>
	Very Satisfied/Satisfied		Very Unsatisfied/Unsatisfied			
	No.	Mean (SD)	No.	Mean (SD)		
Grit	479	3.29 (0.33)	44	3.29 (0.31)	-0.002	1.00
Consistency of interest	489	2.39 (0.60)	45	2.52 (0.52)	-1.42	.16
Perseverance of effort	486	4.19 (0.46)	44	4.06 (0.47)	1.79	.07
Brief grit	485	3.24 (0.32)	44	3.27 (0.36)	-0.46	.65
Ambition	493	3.55 (0.48)	44	3.48 (0.55)	0.93	.35

SD, standard deviation.

as individuals who work hard, persevere despite setbacks, and are ambitious. The physicians also reported lower levels of consistency of interest in their work, which may suggest the interests of physicians who practice in rural states such as Idaho frequently are evolving and changing. This finding may also reflect that this group of physicians is open to change and know they need to be aware of alternative options,⁹ which can be of benefit because medical information and technology changes on a frequent basis. These results may also indicate that physicians who are attracted to practicing in rural states such as Idaho enjoy a broad scope of practice.¹⁰

Because the trait “grit” was measured by adding the mean subscale scores for perseverance of effort and level of consistency, Idaho physicians, whether in rural or nonrural settings, had nearly identical mean scores for the trait grit (rural, 3.29 and nonrural, 3.30). Grit and its subscales had possible mean maximum values of 5.0, and it is evident that the overall mean grit score for Idaho physicians was lowered because of their low Consistency of Interest subscale scores (rural, 2.38 and nonrural, 2.40). The Perseverance of Effort subscale for each group was much higher (rural, 4.18 and nonrural, 4.19). Future studies of other physician groups will assist in determining whether the subscale pattern found in this study is consistent among all physicians or whether it varies by state, region, specialty practice, or setting.

That the sampled physicians’ self-reported level of perseverance was high is not surprising, considering that physicians must sustain effort throughout years of rigorous medical training. Practicing physicians in rural and nonrural settings must continue to work hard and persevere for their patients

and themselves to remain successful. The high level of perseverance and low level of consistency of interest may be a phenomenon that occurs among physicians as a whole or may reflect a state or regional occurrence. This set of characteristics could also have implications for physician satisfaction and recruitment if it is found to be a regional occurrence. For example, practice situations that provide an opportunity for varied skills and new learning (such as the broad scope of practice that occurs in rural physician practices) in combination with a demand for high perseverance (also found in such practices with fewer outside resources) may be the ideal practice situation to attract the kind of physicians identified in this study. Much of Idaho, like other rural states, is largely isolated from urban environments and may be unique in both the advantages and challenges offered to physician practices, whether they are located in rural or nonrural settings, and thus may self-select for certain physician characteristics.

Rural and nonrural physicians reported similar levels of ambition. Specialty physicians reported a statistically significant difference demonstrating higher levels of ambition compared with primary care physicians. Further analysis found a statistically significant higher level of ambition of rural specialty physicians compared with nonrural family physicians and nonrural specialty physicians compared with nonrural primary care physicians. This subscale includes items such as, “I aim to be the best in the world at what I do” and “I am driven to succeed.” Reasons for differences in ambition between physician groups will need to be explored should the findings be consistent in future studies using similar variables. To become a physician and make a positive difference in the lives of

patients and oneself, such aptitudes would seem to be a given for all physician groups.

Responding physicians working in rural and nonrural settings reported that they were very satisfied or satisfied in their current practices. The finding of high rates of satisfaction among Idaho physicians is consistent with similar findings among rural family physicians in Idaho¹¹ and California.¹² The confirmation of the high satisfactions rates for rural Idaho family physicians found by Baker et al¹¹ now has been demonstrated to be a finding that is consistent among Idaho physicians across both practice location and physician training. Specialty care physicians reported a statistically significant higher level of satisfaction with their practice (94.2%) compared with primary care physicians (88.8%). Although the high percentages reflect that both groups are highly satisfied, this finding of statistical significance may reflect a number of widely recognized differences, including levels of reimbursement, on-call duties, and total duty hours.

The analysis of mean Grit Scale scores compared by satisfaction rates produced findings similar to those of previous discussion of the mean grit scale and subscale scores. Overall, these findings suggest that levels of overall grit, consistency of interest, perseverance of effort, and ambition are stable traits despite whether one is satisfied in their current job.

Limitations

A potential limitation of this research is that the respondents to the surveys may not represent the entire eligible respondent classes. However, the high membership rates of the facilitating organizations (79% for the IMA and 84% for the IAFP) suggest that those physicians surveyed are likely to be representative of the physician population of Idaho. The response rates of rural physicians (30.5%) and nonrural physicians (25.3%) were similar to the overall response rate (26.5%). In addition, the classification of respondents as rural (26.8%) and nonrural (73.2%) were similar to these populations in the organizational memberships of the IMA (28.5% rural, 71.5% nonrural) and the IAFP (35% rural, 65% nonrural). The overall response rates for the 2 surveys seem reasonable given the survey methodology. However, the nonresponders could significantly impact the Grit Scale scores and satisfaction rates.

Another limitation could be the presence of social desirability bias. Because the respondents an-

swered the questions using a self-report method (even though their responses were confidential) and because each question is relatively transparent in terms of what is being asked (although the actual subscales are difficult to assess), they may have been motivated by the desire to “look good.” However, that the mean grit scores for the physicians in this study (3.30) are lower than the mean grit scores from research performed with other groups of high-performing individuals (Ivy League undergraduates, 3.46; West Point Cadets, 3.78; and high-performing adults aged ≥ 25 years, 3.65 and 3.41) who have been studied⁹ provides a strong case that this phenomenon did not occur.

Recommendations for Further Study

Requesting additional demographic information of respondents such as sex, year of birth, and years of practice and expanding the assessment of grit, ambition, and satisfaction levels to include states with larger nonrural settings and a greater number of regions may yield levels of grit and satisfaction revealing important regional and demographic distinctions. We believe that the finding of high physician satisfaction rates in Idaho may be unique and that a comparative analysis may be of substantial benefit in better understanding the factors leading to this finding. High rates of physician satisfaction have obvious workforce implications for Idaho and other states, and when related to noncognitive descriptors such as grit, consistency of interest, levels of perseverance, and ambition, are worthy areas for further study.

The authors thank the IAFP, the IMA, Dr. James Girvan, and Tara Cooper for their assistance in this research. The authors express gratitude to Dr. Duckworth for permission to use the Grit Scale for this study.

References

1. American Academy of Family Physicians. Family physician workforce reform: recommendations of the American Academy of Family Physicians. 2006. Available at http://www.aafp.org/online/etc/medialib/aafp_org/documents/about/congress/2006/bd-rpts/brdrptp.Par.0001.File.dat/BoardReportPonPhysicianWorkforceReform.pdf. Accessed May 20, 2009.
2. U.S. Department of Health and Human Services (DHHS). State health workforce profile highlights: Idaho. DHHS, Health Resources and Services Administration (HRSA). Available at <ftp://ftp.hrsa.gov/migrated/bhpr/workforce/summaries/Idaho03.pdf>. Accessed May 20, 2009.

3. MGT of America, Inc. Medical education study final report for Medical Education Study Committee, Idaho State Board of Education. Tallahassee: MGT of America, Inc; 2007.
4. Eley D, Young L, Shrapnel M. Rural temperament and character: a new perspective on retention of rural doctors. *Aust J Rural Health* 2008;16:12–22.
5. Gardiner M, Sexton R, Durbridge M, Garrard K. The role of psychological well-being in retaining rural general practitioners. *Aust J Rural Health* 2004; 13:149–55.
6. Schmitz D, Baker E, Epperly T, Reed A, Nukui A. Idaho Rural Family Physician Workforce Study: The Community Apgar Questionnaire. 2008. Available at <http://healthandwelfare.idaho.gov/Portals/0/Health/Rural%20Health/RuralWorkforceStudy2.pdf>. Accessed May 20, 2009.
7. Eley D, Young L, Przybeck T. Exploring the temperament and character traits of rural and urban doctors. *J Rural Health* 2009;25:43–9.
8. Lepnurm R, Dobson A, Backman A, Keegan D. Factors associated with career satisfaction among general practitioners in Canada. *Can J Rural Med* 2007;12:217–30.
9. Duckworth AL, Peterson C, Matthews MD, Kelly DR. Grit: perseverance and passion for long-term goals. *J Pers Soc Psychol* 2007;92:1087–101.
10. Baker E, Schmitz D, Epperly T, Nukui A, Miller C. Rural Idaho family physicians' scope of practice. *J Rural Health* 2010;26:85–9.
11. Baker E, Schmitz D, Newell M, Ford R. Idaho Family Physician Rural Workforce Assessment Study (Rural Family Physician Work Force Study Phase 1). 2007. <http://www.healthandwelfare.idaho.gov/Portals/0/Health/Rural%20Health/RuralWorkforceStudy1.pdf>. Accessed June 30, 2009.
12. Luman K, Zweifler J, Grumbach K. Physician perceptions of practice environment and professional satisfaction in California: from urban to rural. *J Rural Health* 2007;23:222–8.