

Variation of Mood and Empathy During Internship

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INTERNSHIP IS A YEAR OF TREMENDOUS change, both personally and professionally. Many issues can challenge the adaptive capacity of interns, including relocation away from support systems, sleep deprivation, demands of patient care, financial indebtedness, and reduced time with family.¹ It has been well established that many interns have feelings of anxiety and depression at some point during the year.²⁻⁶

Many studies have examined psychiatric symptoms of house staff.⁷⁻¹⁵ Previous studies of family medicine residencies using the Beck Depression Inventory have demonstrated a 7%-to-8.6% incidence of depressive symptoms during internship.^{2,3,5} Similarly, a study of 350 family medicine residents surveyed at 6-month intervals over 3 years demonstrated significant depressive or mood disturbance symptoms in 7% of residents using the Beck Depression Inventory and 3% of residents using the Profile of Mood States (POMS), rates that were stable over the course of the study.⁴ A study of 227 house staff at a midwestern university-based medical center demonstrated that 18% of residents felt anxiety and/or depressive symptoms most of the time.⁷ Symptoms are not confined to residents in the United States. A nationwide Norwegian study of 371 junior house officers revealed that 11% developed mental health problems requiring treatment during internship.¹⁵ Despite this research on depression and other mental health issues, few data have been collected with respect to em-

Context Internship is a time of great transition, during which mood disturbances are common. However, variations in mood and empathy levels throughout the internship year have not been investigated.

Objective To examine mood patterns and changes in empathy among internal medicine residents over the course of the internship year.

Design Cohort study of interns involving completion of survey instruments at 4 points: time 1 (June 2000; Profile of Mood States [POMS] and Interpersonal Reactivity Index [IRI]), times 2 and 3 (November 2000 and February 2001; POMS), and time 4 (June 2001; POMS and IRI).

Setting Internal medicine residency program at a university-based medical center.

Participants Sixty-one interns.

Main Outcome Measures Baseline scores of mood states and empathy; trends in mood states and empathy over the internship year.

Results Response rates for time 1 were 98%; for time 2, 72%; for time 3, 79%; and for time 4, 79%. Results of the POMS revealed that physicians starting their internship exhibit less tension, depression, anger, fatigue, and confusion and have more vigor than general adult and college student populations ($P < .001$ for all). Results of the IRI showed better baseline scores for perspective taking ($P < .001$) and empathic concern ($P = .007$) and lower scores for personal distress ($P < .001$) among interns compared with norms. Five months into internship, however, POMS scores revealed significant increases in the depression-dejection ($P < .001$), anger-hostility ($P < .001$), and fatigue-inertia ($P < .001$) scales, as well as an increase in IRI personal distress level ($P < .001$). These increases corresponded with decreases in the POMS vigor-activity scores ($P < .001$) and IRI empathic concern measures ($P = .005$). Changes persisted throughout the internship period.

Conclusions We found that, in this sample, enthusiasm at the beginning of internship soon gave way to depression, anger, and fatigue. Future research should be aimed at determining whether these changes persist beyond internship.

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pathy during residency, specifically whether residency training affects the ability of medical residents to exhibit and develop empathic concern for patients. Although previous research among third-year nursing students showed no change in empathy during a 9-month training period, we are not aware of any similar work among physicians in training.¹⁶

To learn more about the time course of mood and empathy changes, we examined a cohort of internal medicine residents on 4 occasions during their internship year. We were interested in

comparing their baseline scores of mood states and empathy with norms for other adult populations. We also tracked group trends during the internship year. We expected high levels of

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anxiety at the beginning of internship, given the transition from medical student to house officer. Subsequently, we expected waning of anxiety and appearance of depression in the middle of the year due to long hours and fatigue. Finally, we expected improvement, but not a complete return to baseline, by the end of internship as interns may experience stress related to assuming resident roles, and fatigue remains high. We expected empathy levels to be very high early in the year, with some reduction in sensitivity to others by the end of the year due to fatigue and mood disturbances.

METHODS

All 61 interns in the internal medicine residency program at the Hospital of the University of Pennsylvania were enrolled in the study at the departmental orientation session for interns. Interns were told that participation was voluntary and that only group data would be reported. The university institutional review board approved the study.

The internship year consists of 2 months in the intensive care unit with every third night call, 7 months in inpatient care with every fourth night call, 2 months in ambulatory medicine during which no calls are taken, and 1 month of vacation.

Participants were asked to complete questionnaires 4 times throughout the year. Time 1 was June 2000 (intern orientation); time 2, November 2000; time 3, February 2001; and time 4, June 2001. At times 1 and 4, interns completed the POMS¹⁷ and Interpersonal Reactivity Index (IRI).¹⁸ At times 2 and 3, they completed only the POMS. At times 1 and 4, interns wrote their names on tear-off cover sheets for the IRI. An administrative assistant coded identification numbers on the IRI so that subscale score relationships could be matched from the time 1 and time 4 administrations. To preserve anonymity, coding was not done for the POMS.

The POMS is a 65-item instrument that measures mood states on a 5-level adjectival scale: not at all, a little, moderately, quite a bit, and extremely.¹⁷ The

POMS measures scores along 6 mood states: tension-anxiety, depression-dejection, anger-hostility, fatigue-inertia, confusion-bewilderment, and vigor-activity. Scores on the instrument have been validated in many published studies.⁴ The POMS was selected instead of other depression instruments because it can be used to assess multiple mood states simultaneously.

The IRI is a 28-item instrument consisting of 4 different 7-item subscales used to measure empathy.¹⁸ Empathy was of particular concern to us because of recent interest in ensuring that health care professionals exhibit appropriate amounts of humanism and professionalism with patients and colleagues.¹⁹ We focused on 3 of the IRI scales: perspective taking, empathic concern, and personal distress. The perspective-taking subscale assesses the respondent's tendency to spontaneously adopt the psychological viewpoint of others. The empathic concern subscale assesses "other-oriented" feelings of sympathy and concerns for unfortunate others. The personal distress subscale measures "self-oriented" feelings of anxiety and unease in interpersonal settings. The IRI subscales have been shown to be reliable and accurate indicators of social functioning, self-esteem, emotionality, and sensitivity to others.²⁰

We compared baseline scores for interns with general population adult and college student norms and changes in scores during the course of internship year. Norms are published separately by sex. Because we did not collect sex identifiers in the current study, normative data for men and women were weighted and combined. Interns' scores were compared with norm scores using the *t* test. Within the intern cohort, baseline POMS scores (time 1) were compared with scores recorded at times 2, 3, and 4. Scores for the 4 administrations of the POMS were compared using analysis of variance. Because intern identification procedures were not used during phases of POMS administration, scores for the 4 admin-

istrations were treated as independent samples to provide a conservative estimate of the statistical significance of differences among the 4 means. Post hoc comparisons of means were made with the Duncan test. Subscale scores on the IRI from times 1 and 4 were matched and compared using the paired *t* test. Statistical analyses were carried out using SAS, version 8.2 (SAS Institute Inc, Cary, NC).

RESULTS

In July 2000, 61 interns began postgraduate year 1 in internal medicine at the Hospital of the University of Pennsylvania: 45 in the categorical program, 8 in the primary care program, and 8 in the preliminary program. The cohort was 60% male and 40% female. Fifty percent were married and 8% had children. Sixty-eight percent anticipated a subspecialty career in internal medicine. The median level of indebtedness at graduation from medical school was \$56 000.

At time 1, the POMS and IRI were completed by 60 interns (98%). At times 2 and 3, the POMS was completed by 44 interns (72%) and 48 interns (79%), respectively. At time 4, the POMS and the IRI were completed by 48 interns (79%). TABLE 1 presents the score distributions for 60 interns who completed the POMS and IRI at time 1. Results from the POMS indicate that on entering residency training, medical interns exhibit less tension, depression, anger, and fatigue but more vigor than the average college student or adult ($P < .001$). Additional data from the IRI showed that interns had significantly better scores for perspective taking ($P < .001$) and empathic concern ($P = .007$) and lower scores for personal distress ($P < .001$).

However, as shown in TABLE 2, significant changes in POMS and IRI scores became evident in subsequent questionnaire administrations. Specifically, statistically significant increases in POMS scores for depression-dejection ($P = .002$), anger-hostility ($P < .001$), and fatigue-inertia ($P < .001$) occurred, while a statistically significant decrease in the vigor-

activity subscale ($P < .001$) became apparent. Distributions were slightly positively skewed (skewness statistics > 0) on most occasions, especially for depression-dejection, but skewness did not increase over time. There were also changes in IRI measures of empathy; specifically, a significant decrease in empathic concern ($P = .005$), paralleling an increase in personal distress ($P < .001$).

COMMENT

Internship is generally thought to be a stressful period in medical training due to factors such as long hours, challenging patients, sleep deprivation, and limited time for personal pursuits.¹⁶ Several authors have assumed that these conditions contribute to the strikingly high prevalence of depression and anxiety recognized among residents.²⁻⁷ To

our knowledge, temporal changes in depressive symptoms over the course of internship have not been previously studied. In addition, there are few, if any, data on changes in levels of empathic concern for the internship year.

This study aimed to evaluate the variations in mood states and empathy that occur during the internship year. Consistent with our expectations, results of the first administration of the POMS and IRI demonstrated that interns in this cohort arrived with high levels of vigor, energy, and a well-established ability to demonstrate empathic concern.¹⁶ However, as early as November, we found that significant mood changes were already evident among our cohort. Interns became more angry and depressed. These data support previously reported findings that internship nega-

tively affects personal well-being.^{6,7,20,21} As reflected in the changes in vigor and fatigue reported at time 2, it is possible that sleep deprivation contributed to the mood changes we observed. Of additional concern is the increase in anger reported by the interns. In this study, we are not able to delineate the specific source of this anger or to determine the form in which this anger may have been expressed. We are concerned, however, that the ability of interns to express concern and empathy in patient care would be compromised by the presence of appreciable levels of anger and depression. Results recorded during the second administration of the POMS in November persisted through February, substantiating the reliability of our observed changes in mood as well as indicating the persistence of these changes.

Table 1. Score Distributions at Time 1 and Comparison With Norms

	Cronbach α	Interns (n = 60)				Mean (SD) Score of Norms*	t	P Value
		Mean (SD) Score	Minimum Score	Maximum Score	Scoring Range			
Profile of Mood States								
Tension-anxiety	86	10.85 (5.57)	0	27	0-36	13.50 (7.16)	-3.65	<.001
Depression-dejection	88	5.12 (5.59)	0	29	0-60	14.12 (11.04)	-12.37	<.001
Anger-hostility	76	3.85 (3.85)	0	16	0-48	9.62 (7.56)	-11.51	<.001
Vigor-activity	89	20.55 (5.48)	6	31	0-32	15.60 (6.36)	6.94	<.001
Fatigue-inertia	86	4.68 (4.16)	0	18	0-28	10.58 (6.56)	-10.89	<.001
Interpersonal Reactivity Index								
Perspective taking	76	20.25 (4.04)	11	28	0-28	17.37 (4.79)	5.48	<.001
Empathic concern	82	22.00 (4.05)	10	28	0-28	20.36 (4.02)	3.11	.007
Personal distress	71	8.78 (4.11)	1	20	0-28	10.87 (4.78)	-3.91	<.001

*Mean scores of norms on the Profile of Mood States survey were estimated from scores for male and female samples provided in table 26 of the Profile of Mood States scoring manual.¹⁷ Mean scores of norms on the Interpersonal Reactivity Index were estimated from data provided by Mark H. Davis, PhD (written communication, July 2001).

Table 2. Changes in Mean Scores Over Time*

	Mean Score (SD/Skewness)				P Value†
	Time 1 (n = 60)	Time 2 (n = 44)	Time 3 (n = 48)	Time 4 (n = 48)	
Profile of Mood States					
Tension-anxiety	10.85 (5.57/0.59)	10.59 (5.91/0.92)	10.42 (5.34/-0.13)	9.27 (5.32/0.31)	.49
Depression-dejection	5.12 (5.59/2.21)	10.67 (10.89/1.65)	10.74 (9.31/1.10)	8.50 (8.03/1.00)	.002
Anger-hostility	3.85 (3.84/1.13)	9.72 (6.73/0.73)	10.46 (8.49/0.98)	7.69 (8.00/1.27)	<.001
Vigor-activity	20.55 (5.48/-0.48)	15.67 (6.92/0.10)	14.29 (7.34/0.08)	17.06 (7.03/-0.26)	<.001
Fatigue-inertia	4.68 (4.16/1.16)	10.69 (6.18/0.67)	10.35 (5.61/0.52)	8.47 (5.99/0.46)	<.001
Interpersonal Reactivity Index					
Perspective taking	20.25 (4.04/0.01)	...	...	19.48 (4.42/-0.35)	.06
Empathic concern	22.00 (4.05/-0.88)	...	...	20.75 (4.29/-0.10)	.005
Personal distress	8.78 (4.11/0.12)	...	...	10.65 (4.25/0.72)	<.001

*Boldface indicates that mean scores differed significantly based on the Duncan post hoc comparison; ellipses, data not collected at this point.

†P values were calculated based on analysis of variance for independent samples for Profile of Mood States data and paired t test for Interpersonal Reactivity Index data.

Perhaps of most concern is that by mid June, as the internship year neared completion, the cohort demonstrated little improvement in mood state. Anger and fatigue persisted, as did lack of vigor. The overall mean of the group was not much lower for depression. In addition, results of the IRI administration at the end of internship demonstrated a significant increase in personal distress coupled with a decrease in empathic concern. In a similar study tracking changes in empathy among nursing students during a 9-month training period, such a decline in empathy was not observed.¹⁶ The etiology of this difference is not clear. However, it is not inconceivable that the significant level of mood disturbance documented by the POMS data accounts for at least some of this difference between the 2 professions.

We believe that our data are generalizable to other internal medicine programs. The structure of the internal medicine internship year at our institution is based on program requirements of the Residency Review Committee for Internal Medicine. As such, it is similar to that of internal medicine residencies across the United States. We expect that the results of our study are applicable to interns in other internal medicine

training programs. Nevertheless, we acknowledge certain limitations of our study sample. Programs at hospitals with less clinical volume and more ancillary personnel may provide a less stressful internship experience. While internships in internal medicine include inpatient and outpatient responsibilities and periods of in-house call, programs in other specialties may make significantly different demands on residents that would cause these residents to demonstrate different score patterns than the ones we observed. In addition, scores for interns were compared with general population adult and college student norms. It is not surprising that interns initially scored higher on all dimensions. Norms for the POMS and IRI based on responses of other professional populations would have been preferable but data were not available. Finally, for purposes of enhancing study participation by emphasizing survey anonymity, respondents' scores were not matched across the multiple POMS administrations. Therefore, we could not assess individual patterns of disturbance over time and we are unable to prove that the cohort changes we observed were not the result of a few individuals who became increasingly impaired during the year. However, the

distribution of our data remained relatively constant from the initial test administration results; in fact, many distributions shift toward normalcy, suggesting that our results were not overly influenced by a small number of outliers. Finally, we did not follow a non-physician cohort over the same time and, therefore, are unable to determine whether comparable changes in personality and mood occurred in the general population. It is possible that this cohort will return to baseline at the end of residency training. Even if this were to occur, it is not irrelevant that we have discovered significant negative impacts of the internship experience that could be improved with appropriate interventions. These limitations emphasize the importance of future research aimed at tracking mood changes and their impact on the development of empathy among residents throughout their training period and beyond.

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