Project on the Good Physician: A Proposal for a Moral Intuitionist Model of Virtuous Caring

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INVESTIGATIONS

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ABSTRACT

Theory: In the Project on the Good Physician, the authors endeavor to advance medical character education by proposing and testing a *moral intuitionist model of virtuous caring* that may be applicable to physician training. This model proposes that the moral intuition to care/harm motivates students to extend care to those in need. *Hypotheses*: Hypothesis 1: Medical students will report stronger preferences for the intuition to Care/harm over other moral intuitions in clinical decision making. Hypothesis 2: Care/harm will have the strongest correlation with Generosity than the other moral intuitions. Hypothesis 3: There will be positive associations between Care/harm and the caring virtues (Mindfulness, Empathic Compassion, and Generosity). Hypotheses 4–5: The virtue of Empathic Compassion (or Mindfulness) will moderate the relationship between Care/harm and Generosity. Hypotheses 6–7: Neuroticism (or Burnout) will negatively moderate the association between Care/harm and Generosity (or between Empathic Compassion and Generosity). *Method*: The authors used data from a 2011 nationally representative sample of U.S. medical students ($N = 500$) to test the relationship between the moral intuition to Care/harm and physician caring virtues. Moral intuitions were assessed using the Moral Foundations Questionnaire, whereas physician virtues were measured using scales adapted from validated constructs. *Results*: The authors found that students reported stronger preferences for the intuition to Care/harm over the four other moral intuitions. Each moral foundation was weakly but significantly correlated with Generosity, yet Care/harm had the strongest correlation among them. Neuroticism and Burnout did not weaken the link between Care/harm and the virtues. *Conclusions*: Data from the descriptive-correlational study reported here offer preliminary support for the construct validity of an educational model that targets the moral intuitions. The article concludes with a discussion of the implications of a moral intuitionist approach for medical character education and offers three hypotheses for future empirical research.

Introduction

Underlying the medical ethics and contemporary "professionalism" movements in medicine is an emerging recognition that physician character development is an essential but elusive goal of medical education.[1] Prominent medical organizations have launched major initiatives to teach "physician professionalism" as a "core competency" while requiring medical educators to measure the outcomes of their efforts.[2–6] However, despite these important initiatives, at the present time we know very little about whether and how the myriad of proposed interventions and curricula actually shape the moral character and ethical practices of doctors.

One educational model of medical professionalism, referred to as "relationship-centered care,"[7] places physician self-awareness, empathy, and compassion at the heart of physician–patient interactions. In the Project on the Good Physician (The University of Chicago), we endeavored to advance the relationship-centered care approach by proposing and testing a *moral intuitionist model of virtuous caring* that may be applicable to physician training. The proposed theoretical model derives from but also extends the social intuitionist model (SIM) of moral behavior.[8–10] In contrast with the previously dominant Rationalist paradigm, which assumed that conscious, deliberative, language-based reasoning motivates moral behavior, the SIM proposes that the first step

toward moral behavior is the often unconscious activation of one or more of the *moral intuitions*.[8] These intuitions sensitize the person to moral features of a given situation and provide a basic motivational response toward a particular moral behavior.

This moral intuitionist model has practical implications for medical education. Today many ethics courses at medical schools take a predominately rationalist approach to ethics education, as they invite students to discuss and resolve various dilemmas facing medical practitioners.[11] In overview, the moral intuitionist approach proposes that character development is best accomplished by *tuning-up* (activating) moral intuitions, *amplifying* (intensifying) moral emotions related to intuitions, and *strengthening* (expanding) moral virtues, more than by "learning" explicit ethical rules or principles.[12,13] The moral intuitionist model indicates that if educators hope to cultivate virtuous caring in their trainees, medical educators should focus less on cognitive *moral reasoning* and more on *moral motivation*. In brief, this approach to education in medical professionalism conceptualizes virtues as intuition-expressive, emotion-related social skills that are cultivated gradually by real-world practice and helped along by role models and moral stories (narrative).

Intuition to Care/harm

One such moral intuition is known as the Care/harm intuition, which activates in most persons when they perceive another person suffering and automatically generates an evaluation of the situation as good or bad. According to the SIM, such an intuition is then amplified by *moral emotions* such as empathic compassion, triggering responses including physiological reactions and facial expressions. These emotions lead in turn to actions that are guided by and express *moral virtues* such as interpersonal generosity. The SIM conceives of these virtues as sets of procedural skills that script how the person will act in a given situation. According to this moral intuitionist model, this entire process, from intuition to virtuous caring, often takes place prior to rational deliberation about how best to proceed. With respect to Care/harm, the SIM posits that the intuition to Care/harm makes human beings perceptually sensitive to signs of suffering and need in others and that this initial sensitivity then motivates persons to extend care to those in need. Once the Care/harm intuition is activated, the intuition triggers the moral emotion of empathic compassion, thus making it possible for one person to feel the suffering of another and be moved to relieve that suffering.

Extending the logic of this moral intuitionist model, we expected that medical students would report a relative preference for the intuition to Care/harm over other moral intuitions and that this preference for Care/harm would be systematically related to virtues expected to facilitate the expression of caring in physician–patient interactions. In this study, we offer a model that predicts that the caring virtues of Mindfulness, Empathic Compassion, and Generosity will be associated with the intuition to Care/harm. Empirical confirmation of this model would extend the moral intuitionist model of virtuous caring with respect to the Care/harm intuition.

Obstacles to virtuous caring: Burnout and Neuroticism

Two well-described potential threats to the development of the care-related moral virtues are Burnout and Neuroticism. Burnout, a syndrome of stress-related emotional exhaustion, appears most commonly in professions such as medicine and education that require an intense engagement with people and may thus involve the care-related virtues.[14] It has been associated in studies of medical students and practitioners with increased cynicism, increased friction in personal relationships, decreased job performance and commitment, suboptimal patient care practices, and low career satisfaction.[15,16] Similarly, Neuroticism, a disposition toward negative emotional states, has been associated with higher levels of stress and dissatisfaction with medicine as a career.[17,18] Our model suggests that such negative dispositional and environmental factors as these may inhibit the expression of the intuition to Care/harm and thus obstruct the development of the relevant caring virtues.[12]

Hypotheses of the moral intuitionist model of virtuous caring

Therefore in our analyses we tested seven model predictions about the relationship between the moral intuition to Care/harm and hypothesized caring virtues.

Hypothesis 1: Preference for Care/harm. Medical students will report stronger preferences for the intuition to Care/harm over other moral intuitions in clinical decision making.

Hypothesis 2: Care/harm predicts generosity. Care/harm will have the strongest correlation with Generosity than the other moral intuitions.

Hypothesis 3: Positive associations between Care/harm and the physician virtues. There will be positive associations between Care/harm and the virtues of Mindfulness, Empathic Compassion, and Generosity.

Hypothesis 4: Empathic compassion as moderator of the Care/harm–Generosity link. The virtue of Empathic Compassion will moderate (strengthen) the relationship between Care/harm and Generosity, such that the Care/harm–Generosity link is stronger when the virtue is stronger.

Hypothesis 5: Mindfulness as moderator of the Care/harm–Generosity link. The virtue of Mindfulness will moderate (strengthen) the relationship between Care/harm and Generosity, such that the Care/harm–Generosity link is stronger when the virtue is stronger.

Hypothesis 6: Neuroticism/Burnout as moderators of the Care/harm–Generosity link. Neuroticism and Burnout (independently considered) will negatively moderate (weaken) the association between Care/harm and Generosity, such that the Care/harm–Generosity link is stronger when these inhibiting factors are weaker.

Hypothesis 7: Neuroticism/Burnout as moderators of the Empathic Compassion–Generosity Link. Neuroticism and Burnout (independently considered) will negatively moderate (weaken) the association between Empathic Compassion and Generosity, such that the Empathic Compassion–Generosity link is stronger when these inhibiting factors are weaker.

Method

Procedure

A questionnaire was sent to 960 third-year medical students from 24 allopathic medical schools between January and April 2011. We excluded respondents from the analysis if they were not currently in their 3rd year of medical school because of time away from school or for other reasons ($n = 41$). To construct our target sample, we selected 960 students from 24 allopathic medical schools in the United States using a two-stage sample design. In Stage 1, we selected schools with probabilities proportional to total enrollment so that the larger schools would have a greater chance of being included in the study. Data for allopathic medical school sampling were obtained from published reports. In Stage 2, we used simple random sampling to select a fixed number of students (40) from each selected school. This two-stage procedure is an efficient way of including large schools (where the "typical" allopathic medical student attends) while evening out student weights to reduce the effect of disproportional school selection on test statistics. The student sample was obtained from the American Medical Association Physician Professional Data (Masterfile), which has a near-complete listing of students

pursuing M.D. degrees at schools within the United States and its territories. To make nationally representative estimates, case weights were employed to reflect sources of variance associated with the sample design and to adjust for potential nonresponse bias (using Stata v.12) as described in a related study.[19,20] This study was approved by the University of Chicago Social and Behavioral Sciences Institutional Review Board.

After a relevant literature review in the medical ethics/ professionalism, moral psychology, and virtue ethics literature,[12,13] survey questions underwent expert review by colleagues, as well as pretesting by a group of 3rd-year medical students at the University of Chicago Pritzker School of Medicine. Quantitative data collection was conducted in two phases: administration of self-report Questionnaire 1, which assessed demographic variables including gender, race/ethnicity, immigration history, specialty intention, social mission score of the medical school, and other information about medical school experiences (Time 1; students were 3rd year); a recontact phase that administered Questionnaire 2 six to nine months later (Time 2; 3rd-year students had become 4th-year students). Participants were paid $5 for completion of the first questionnaire and $10 for completion of the second questionnaire. Using a combination of postal mailings and e-mail links to the online versions of the questionnaires, we obtained a response rate of 63% for Time 1 (605/960). At Time 2 our sample size decreased to 474 eligible participants (95% in their 3rd year; 54.7% male, 61.3% White).

The Time 2 questionnaire repeated many measures from the Time 1 questionnaire, including physician mindfulness, physician empathic compassion, physician generosity, and perceived burnout. It also gathered new data on the following variables: moral intuitions and Five Factor personality traits (e.g., Neuroticism) and burnout. Because most of the measures of theoretical interest in this first study were included in Questionnaire 2, data reported here were obtained primarily at Time 2, with exceptions noted next.

Measures of physician virtues

Mindfulness. The questionnaire included six questions related to the Nonreact and Act with Awareness subscales of the Five Facet Mindfulness Questionnaire (FFMQ). In previous research, [21] the FFMQ has demonstrated adequate internal consistency, ranging $\alpha = .70$– .92. We selected questions from the FFMQ that seemed particularly relevant to the medical setting and modified items to reflect physician–patient interactions. There were three questions for each scale (Appendix A). Students responded on a 5-point scale from 1 (*never or very*

rarely true) to 5 (*very often or always true*). The composite scale was calculated by obtaining the sample means; higher scores reflect greater self-reported mindful awareness in clinical interactions.

Empathic compassion. The questionnaire included five items related to the constructs of Empathic Concern and Perspective Taking as conceptualized by the Interpersonal Reactivity Index.[22] We selected questions from both the Toronto Empathy Questionnaire[23] and the Jefferson Scale of Physician Empathy[24] that related to these constructs. Original items were modified to reflect physician–patient interactions. There were three items for Empathic Concern and two items for Perspective Taking (Appendix B). Students indicated on a 5-point scale from 1 (*does not describe me well*) to 5 (*describes me well*) the degree to which each item accurately described them. The composite scale was calculated by obtaining the sample means; higher scores reflect greater self-reported empathic compassion in clinical interactions.

Generosity. Physician generosity was assessed with six questions drawn from the Interpersonal Generosity Scale,[25] again with items modified to reflect physician–patient interactions. In previous research,[25] the Interpersonal Generosity Scale has demonstrated good internal consistency ($\alpha = .87$). We selected questions that appeared to tap three dimensions of effortful giving: *time*, *information*, and *kindness*. There were two items related to Time, one item related to Information, and three items related to Kindness (Appendix C). Students indicated on a 4-point scale the degree to which each item accurately described them, from 1 (*never*) to 4 (*very often or nearly always*). The composite scale was calculated by obtaining the sample means, with higher scores reflecting greater self-reported generosity in clinical interactions.

Measure of moral intuitions

Moral intuitions were assessed with 15 questions adapted from the Moral Foundations Questionnaire (MFQ).[26] Each moral intuition was assessed with three questions (prompts) from the original MFQ (Appendix D). We also included one irrelevant (distractor) item to control for response set bias. Care/harm was assessed with three prompts: "whether or not someone was harmed," "whether or not someone suffered emotionally," and "whether or not someone cared for someone weak or vulnerable." Other moral intuitions assessed included Fairness/reciprocity (sample item: "whether or not someone acted unfairly"), Authority/respect ("whether or not someone showed a lack of respect for legitimate authority"), In-group/loyalty ("whether or not someone did

something to betray his/her team"), and Purity/sanctity ("whether or not someone did something disgusting"). Students indicated on a 6-point scale the degree to which each item accurately described them, from 0 (*not relevant at all*) to 5 (*extremely relevant*). Each three-item subscale was calculated by obtaining the sample means with higher scores reflecting stronger preference for the moral intuitions.

Measure of Neuroticism

Our measure of neuroticism included a short-form version taken from the Big Five Personality Inventory.[17,27] Students indicated on a 5-point scale the degree to which each item accurately described them as a person: 1 (*strongly disagree*), 2 (*disagree*), 3 (*neutral*), 4 (*agree*), 5 (*strongly agree*). Neuroticism was calculated by obtaining the sample means; higher scores reflect greater levels of neuroticism.

Measure of Burnout

We included the short version of the Maslach Burnout Inventory[28] that has been used in previous research on physician, work-related burnout that measures two domains of burnout: Depersonalization and Emotional Exhaustion. Students indicated on a 7-point scale the degree to which each item accurately described them: 0 (*never*), 1 (*a few times a year*), 2 (*once a month or less*), 3 (*a few times a month*), 4 (*once a week*), 5 (*a few times a week*), 6 (*every day*). The two-item scale was calculated by obtaining the sample means; higher scores reflect greater levels of self-reported burnout.

Statistical analyses

We summarized the sample demographics using frequencies and means. For each of the virtues, Neuroticism, and Burnout scales, we described the sample means and computed Cronbach's alphas. Pearson correlations were computed between each pairwise combination of virtue and MFQ scale and between all MFQ scales. Hypothesis testing involved performing stepwise multiple regression for each outcome. Step 1 tested gender and race/ethnicity; Step 2 added MFQ virtues, Neuroticism, or Burnout as independent effects; and Step 3 added an interaction between the covariates that were added in Step 2. To correct for multiple comparisons, we used the Bonferroni and Benjamini/Hochberg adjustments. All analyses used SPSS software (13.0).

Results

After excluding 41 ineligible respondents (students who were not in their 3rd-year clinical clerkships at the time of the survey), the adjusted response rate for the

first questionnaire was 61% ($n = 564/919$) and 84% ($n = 474/564$) for the follow-up questionnaire. Reliability tests of the virtue scales are noted in the appendix.

Hypotheses: Physician virtues and the "moral matrix" of clinical decision making

We explored seven model predictions about the relationships between the moral intuition to Care/harm and each virtue.

H1: Do students report stronger preferences for the care/harm over other moral intuitions?. Figure 1 shows the moral intuitions profile for this national sample of medical students (dotted line). In support of this hypothesis, students did indeed report stronger preferences for the Care/harm ($M = 3.77$, $SD = .80$) over Fairness/reciprocity ($M = 3.53$, $SD = .74$), $t(483) = 7.45$, $p < .001$; Ingroup/loyalty ($M = 3.46$, $SD = .86$), $t(484) = 7.08$, $p < .001$; Authority/respect ($M = 3.62$, $SD = .75$), $t(485) = 3.81$, $p < .001$; and Purity/sanctity ($M = 3.37$, $SD = .90$), $t(481) = 10.40$, $p < .001$.

H2: Does Care/harm have the strongest correlation with Generosity than the other moral intuitions?. Table 1 shows the correlations between each virtue and each moral foundation. We also include the correlation matrix between moral intuitions in Table 2 and the correlation matrix between virtues in Table 3. In these data, each moral foundation was weakly but significantly correlated with Generosity, yet Care/harm had the strongest correlation among them, which was marginally of moderate
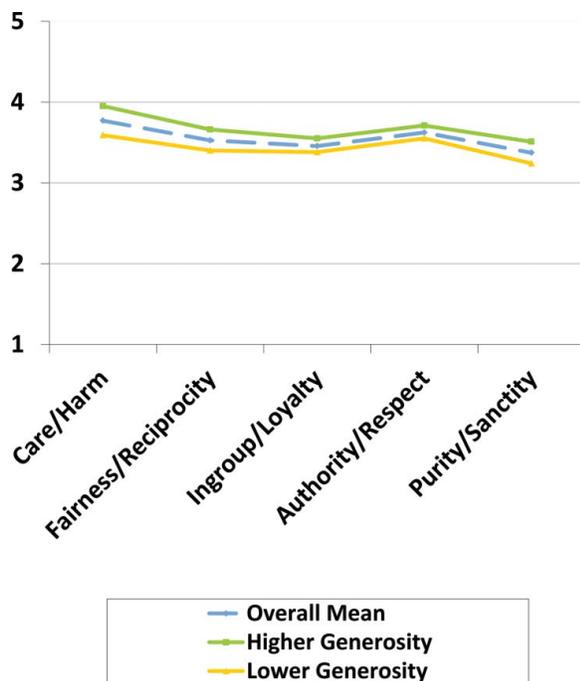

Figure 1. Moral intuitions profile of physicians-in-training.

strength: Care/harm, $r(481) = .30$, $p < .001$; Fairness/reciprocity, $r(481) = .21$, $p < .001$; Purity/sanctity, $r(481) = .20$, $p < .001$; Authority/respect, $r(481) = .16$, $p < .01$; and Ingroup/loyalty, $r(481) = .12$, $p < .01$. Furthermore, using a stepwise multiple regression analysis (see Table 4) to control for race and gender (Step 1: $R^2 = .01$), all five foundations, when considered together, explained a significant amount of additional variance in Generosity (Step 2: $\delta R^2 = .09$, $p < .001$). However, only Care/harm independently predicted Generosity at a significant level ($\beta = .24$, $p < .001$). Indeed, this finding can be seen in Figure 1, which illustrates how students who rated themselves higher on Generosity (mean-split) also self-reported greater use of the intuition to Care/harm ($M = 3.95$, $SD = 1.12$) than did those lower in Generosity ($M = 3.59$, $SD = 2.35$), $t(483) = -5.08$, $p < .001$.

H3: Is Care/harm also associated with Mindfulness and Empathic compassion?. There was a significant positive correlation between the intuition to Care/harm and Mindfulness, $r(481) = .13$, $p < .01$ (see Table 1). However, in the stepwise multiple regression analysis, when controlling for race and gender (Step 1: $R^2 = .01$), and when all foundations were considered together, moral foundations did not explain a significant amount of additional variance in Mindfulness (Step 2: $\delta R^2 = .02$, $p < .10$; see Table 4). Nevertheless, Care/harm (but no other foundation) independently predicted Mindfulness at a significant level ($\beta = .15$, $p < .05$).

For Empathic Compassion, there was also a significant positive correlation between Care/harm and Empathic Compassion, $r(484) = .40$, $p < .001$ (see Table 1). After controlling for race and gender (Step 1: $R^2 = .05$), when all foundations were considered together, they explained a significant amount of additional variance in Empathic Compassion (Step 2: $\delta R^2 = .16$, $p < .001$; see Table 4). Specifically, three foundations independently predicted Empathic Compassion at a significant level: Care/harm ($\beta = .32$, $p < .001$), Fairness/reciprocity ($\beta = .19$, $p < .001$), Ingroup/loyalty ($\beta = -.13$, $p < .05$).

H4: Does Empathic Compassion moderate the Care/harm–Generosity link?. Having established that Care/harm and Generosity were associated (H2), we next considered whether the emotion-related virtue of Empathic Compassion might serve to moderate (strengthen) the association between the intuition to Care/harm and the action-related virtue of Generosity. Although those higher in Empathic Compassion appeared to demonstrate a stronger relationship between Care/harm and Generosity, the multiple regression analysis did not

Table 1. Correlations between moral intuitions and the virtues.

	Care/harm	Fairness/reciprocity	Ingroup/loyalty	Authority/respect	Purity/sanctity
Mindfulness	.13**	0.05	0.01	0.07	0.04
Empathic Compassion	.40***	.31***	0.05	.16***	.20***
Generosity	.30***	.21***	.12**	.16**	.20**

**p < .01. ***p < .001.

demonstrate that this interaction added significant predictive power beyond that accounted for by the main effects (data not shown in tables). Moreover, our adjustment methods for multiple comparisons found no significant interaction between Empathic Compassion and Care/harm in predicting Generosity.

H5: Does Mindfulness moderate the Care/harm–Generosity link?.

We conducted the same analysis for the attention-related virtue of Mindfulness (data not shown in tables). When the interaction term was added to a stepwise multiple regression equation, it did not significantly account for variance beyond that predicted by race, gender, Care-harm, and Mindfulness. Thus, there appeared to be no significant interaction between Mindfulness and Care/harm in predicting Generosity.

H6: Do neuroticism and Burnout moderate the Care/harm–Generosity link?.

Descriptive statistics were as follows: Neuroticism ($M = 7.34$, $SD = 2.21$) with acceptable reliability of .69 (Neuroticism); Burnout ($M = 4.42$, $SD = 2.60$) also with acceptable reliability ($\alpha = .73$). Neuroticism appears to have attenuated the association between Care/harm and Generosity, as Care/harm more strongly predicted Generosity for those lower in Neuroticism than for those higher in Neuroticism (data not shown in tables). However, when the interaction term (Neuroticism × Care/harm) was added (Step 3), it did not significantly account for variance in Generosity beyond that predicted by race, gender, Care-harm, and Neuroticism. Thus, although those higher in Neuroticism appeared to demonstrate a weaker link between Care/harm and Generosity, the multiple regression analysis did not demonstrate that this interaction added significant predictive power beyond that accounted for by the main effects.

Table 2. Correlations between moral intuitions.

	Care/harm	Fairness/reciprocity	Ingroup/loyalty	Authority/respect	Purity/sanctity
Care/harm	1.0	0.57***	0.37***	0.37***	0.51***
Fairness/reciprocity		1.0	0.58***	0.49***	0.50***
Ingroup/loyalty			1.0	0.70***	0.48***
Authority/respect				1.0	0.46***
Purity/sanctity					1.0

***p < .001.

A similar but nonsignificant effect was found for Burnout (data not shown in tables). Again, Burnout appears to have slightly (but not significantly) weakened the significant Care/harm–Generosity link. However, when the interaction term was added (Step 3), it did not significantly account for variance in Generosity beyond that predicted by race, gender, Care-harm, and Burnout.

H7: Do Neuroticism and Burnout moderate the Empathic Compassion–Generosity link?.

We did not find support for the moderating effect of Neuroticism after making adjustments for multiple comparisons. Likewise, there was no support for the moderating effect of Burnout (data not shown in tables). Thus, although there was a strong association between Empathic Compassion and Generosity, in these data Burnout did not appear to significantly attenuate this link.

Discussion

A first major objective of this project was to advance a specific moral intuitionist model of virtuous caring that might be applicable to the relationship-centered approach in medical character education. Our moral intuitionist model hypothesizes that specific virtues will be systematically associated with the intuition to Care/harm, namely, that the intuition to Care/harm would be associated with the attention-related virtue of Mindfulness, the emotion-related virtue of Empathic Compassion, and the action-related virtue of Generosity.

A key facet in our model of virtuous caring is *care sensitivity*, which refers to the degree to which a person is perceptually sensitive to the moral intuition to Care/harm. The moral intuitionist model hypothesizes that five innate perceptual categories (perhaps cognitive "modules" or "heuristics") may provide the biologically prepared intuitional foundations for moral motivation and action. These five intuitional foundations are Care/harm, Fairness/reciprocity, Ingroup/loyalty, Authority/respect, and Purity/sanctity.[26] Previous work among practicing physicians found that moral intuitions partially explained variance in physicians' moral judgments about controversial clinical practices.[29] More recently, Graham and Haidt[30] commended the moral intuitionist model as a way to study both individual- and group-level moral preferences for different groups of people. To our knowledge, the present national study is the first attempt to study moral intuitions of medical students and specifically to link the *Care/harm* intuition to virtues relevant to the expression of Care/harm.

Concerning the convergent validity of the model, these findings support the hypothesis that specific virtues may be systematically associated with the intuition to

Table 3. Correlations between virtues.

	Mindfulness	Empathic Compassion	Generosity
Mindfulness			
Empathic Compassion	.30***		
Generosity	.34***	.54***	

***$p < .001$.

Care/harm: (a) Students reported greater preference for the Care/harm foundation in clinical decision making than the other foundations, and (b) the virtues of Mindfulness, Empathic Compassion, and Generosity were positively associated with the intuition to Care/harm. Moreover, we found that the association of the Care/harm intuition was strongest for the emotion-related virtue of Empathic Compassion and the next strongest for the action-related virtue of Generosity (H3).

Collectively, these findings provide preliminary evidence for the Intuitionist claim that the intuition to Care/harm may provide the first link in the causal chain of caring action. Applied to education in ethics and medical professionalism, this would suggest that programs should consider designing training practices and experiences that intentionally target "educating the moral emotions,"[31] particularly the disposition for empathic compassion.

Our model had suggested that certain dispositional and environmental factors may obstruct or inhibit the expression of the intuition to Care/harm and of the care-related virtues. To provide further discriminate validity, we tested the hypothesis that Neuroticism and/or Burnout would inhibit physician expression of Care/harm and the virtues. In our data, however, Neuroticism and

Burnout did not eliminate the positive association between Care/harm and the caring virtues.

Given the methodological limitations of the present survey-based investigation—specifically, that it was not designed as an experimental intervention study—results cannot be interpreted as directly supportive of these hypotheses. Moreover, to reduce survey burden for our respondents, a further limitation of our study was our use of abbreviated scales for all the virtue measures utilized in the survey. Nevertheless, these abbreviated measures retained adequate psychometric properties in their abbreviated forms. Moreover, because our virtue measures were self-reports, they are subject to recall bias, and many of our scales predictably had ceiling effects. Using peer-observation or faculty evaluations of these virtues may have uncovered stronger relationships. Despite these limitations, our results do provide general support for the correlational linkages predicted by the moral intuitionist model of virtuous caring. Results of this study provided overall support for the construct validity of this model, and these findings have implications for an Intuitionist approach to medical character education.

Implications for an intuitionist approach to education in medical professionalism

Moving forward, the Intuitionist approach offers three concrete hypotheses about the formation and development of virtuous caring:[8,10]

A first hypothesis can be referred to as the *selective attunement hypothesis* and stated as follows: *Prosocial motivation and action is facilitated through practices that*

Table 4. Moral intuitions accounted for significance in generosity and empathic compassion, but not mindfulness.

	Dependent Variable: Mindfulness			Dependent Variable: Generosity			Dependent Variable: Empathic Compassion		
	Unstandardized Coefficients		Standardized Coefficients	Unstandardized Coefficients		Standardized Coefficients	Unstandardized Coefficients		Standardized Coefficients
Model	B	SE	β	B	SE	β	B	SE	β
(Constant)	24.537	.476		20.360	.449		22.943	.449	
Gender	−.193	.258	−.035	−.470	.244	−.088†	−1.098	.244	−.203***
Race/Ethnicity	−.154	.108	−.066	−.089	.102	−.040	−.166	.102	−.074
	Step 1			Step 1			Step 1		
	Model, $F(2, 467) = 1.23$, $p = .29$, $R^2 = .01$			Model, $F(2, 469) = 2.12$, $p = .12$, $R^2 = .01$			Model, $F(2, 470) = 11.02$, $p < .001$, $R^2 = .045***$		
(Constant)	22.656	.951	−.10	15.655	.869	−.021	17.043	.828	−.099*
Gender	−.053	.266	−.058	−.112	.243	−061	−.534	.232	.097*
Race/Ethnicity	−.135	.109	.151*	−.135	.100	.244***	−.218	.095	.315***
Care/harm	.174	.069	−.040	.268	.064	.040	.351	.061	.191***
Fairness/reciprocity	−.49	.081	−.044	.047	.074	.012	.229	.070	−.133*
Ingroup/loyalty	−.47	.069	.076	.012	.063	−.006	−.138	.060	.006
Authority/respect	.093	.084	−.034	−.008	.077	.066	.007	.073	.008
Purity/sanctity	−.035	.062	−.10	.064	.057		.008	.054	.097*
	Step 2			Step 2			Step 2		
	Model, $F(7, 462) = 1.69$, $p = .11$, $R^2 = .025$; $F(5, 462) = 1.86$, $p = .10$, $\Delta R^2 = .020†$			Model, $F(7, 464) = 7.45$, $p < .001$, $R^2 = .101$; $F(5, 464) = 9.51$, $p < .001$, $\Delta R^2 = .092***$			Model, $F(7, 465) = 17.23$, $p < .001$, $R^2 = .206$; $F(5, 465) = 18.88$, $p < .001$, $\Delta R^2 = .161***$		

†$p < .10$. *$p < .05$. ***$p < .001$.

tune-up (activate) moral intuitions related to moral features of social situations (e.g., Care/harm). As just discussed, a primary function of moral intuitions is to provide "perceptual sensitivity" to certain features of moral situations.[10] This suggests that a first process in expanding one's motivation and capacity for virtuous caring would be to facilitate the "tuning up" of innate moral intuitions, especially Care/harm, through their activation and repetition in real-world experiences. This hypothesis is consistent with the recently formulated neurocognitive (connectionist) model of moral character.[32,33] This model views moral intuitions as part of a moral associative network in the brain-mind that gets tuned up gradually by experience.[10] Over time, and with appropriate training, the brain-mind does a progressively better job of recognizing important patterns of input (situations appropriate for Care/harm) and responding with the appropriate pattern of output (compassion and generosity). Connectionist theory holds that this kind of tuning up cannot be replaced with top-down learning, such as the rote learning of rules ethical principles; rather, moral development of this sort calls for the immersion of persons in environments rich in virtue exemplars and in narratives that embody the intuitions that persons wish to habituate.

Haidt thus suggests that the Intuitionist approach to moral development begins with something of an unexpected twist.[8] It posits that because innate moral intuitions are the most fundamental building blocks of moral judgment and action and because these intuitions are "organized in advance of experience,"[10] the most important developmental question is not "How do they get into the child?" but rather "How do they get out?"[8] Drawing on the work of Fiske,[34] Haidt argued that moral development should first be thought of as a process of *externalization* (not internalization) of innate intuitions that naturally manifest themselves as part of normal maturation.[35] Applied to education in ethics and medical professionalism, this would suggest that medical programs consider designing curricula and training experiences that intentionally target the activation and repetition of moral intuitions, particularly the intuition to Care/harm.

A second hypothesis can be referred to as the *emotion amplification hypothesis* and stated as follows: *Prosocial motivation and action is facilitated through practices that amplify (intensify) moral emotions associated with moral intuitions (e.g., compassion associated with Care/harm).* In the Intuitionist approach, the moral intuition (combined with the intensifying effect of a moral emotion that is connected to the intuition) provides the central causal mechanism for moral action. Thus, a second process of moral motivation is "amplification" of the intuition-related moral emotions that energize virtuous

caring. The emotion amplification hypothesis predicts that through systematic exposure to moral emotions that are associated with moral intuitions, over time persons will experience these emotions more frequently, more intensely, and (perhaps) more quickly and thus be energized to enact the relevant virtuous action or skill.[36] In the connectionist account, this intuition-emotion "link" is the primary motivator of moral action, as it is believed that various facets of emotion—preconscious situation appraisals (intuitions), physiology, facial expressions, action tendencies, and "higher" moral reasoning—are connected to each other in a moral associative network.[37] Associative network theory posits that the activation of any facet in the network may activate other facets, creating a kind of cascade effect or reverberation that ripples throughout the network once it is activated.[38,39] This explanation also restates the position of emotion theorist Silvan Tomkins,[40] who argued that emotions (e.g., compassion) act as "amplifiers" of innate action tendencies (e.g., to Care/harm). This explanation is also consistent with recent research which demonstrates that people frequently rely on their moods and momentary flashes of feeling as guides to moral judgments and decisions[41] and with cognitive neuroscience findings that moral judgment making and behavior is disrupted when persons have deficits in emotional information processing.[42]

A third hypothesis in the Intuitionist approach can be referred to as the *virtue rehearsal hypothesis* and stated as follows: *Prosocial motivation and action are facilitated through practices that strengthen those virtues that express a moral intuition and an associated moral emotion (e.g., Generosity related to Care/harm and compassion).* The Intuitionist model posits that to effect the formation and embodiment of intuition-related, emotion-expressive virtues, although it may help to espouse principles and applications of ethical behavior, it is primarily through real-world practice and virtue mimesis that one comes to internalize important virtues (e.g., Generosity). In the moral intuitionist model, internalization and habituation of relevant virtues would be accomplished not only by intentional in vivo and imaginative rehearsal of virtue-related behaviors but through exposure to and imitation of moral exemplars that embody the skills.[43] In support of this hypothesis, Fiske reviewed evidence from anthropology that suggests children are declaratively taught surprisingly little in most cultures and that they acquire most of their cultural knowledge and procedural expertise by observing and imitating the practice of older children and adults.[34] He also suggested that researchers have generally underestimated the importance of indirect means of virtue mimesis in moral education. Applied to character development in medical education, this would suggest that programs should

consider designing training practices and experiences that intentionally expose trainees to virtue exemplars in an attempt to facilitate virtue mimesis. In the Project on the Good Physician, although not the focus of this article—our first report—we collected data that will indirectly speak to this hypothesis. Medical students provided information about the nature of their experiences with virtuous mentors and the impact of these role models on their motivation to become better doctors. This set of analyses will be the focus of our subsequent Project on the Good Physician reports.

In conclusion, our moral intuitionist model of virtuous caring would have implications for an Intuitionist approach to medical character education, particularly whether character development is most effectively accomplished by activating moral intuitions, amplifying moral emotions, and strengthening moral virtues.[13] Such an approach would posit that moral intuitions (e.g., the intuition to care/harm), moral emotions (e.g., empathic compassion), and related virtues (e.g., generosity)—not merely ethical principles and moral reasoning—would the central mechanisms of virtuous caring and therefore ought be the primary focus of ethics and professionalism education during medical training.

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