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Geographic Literacy and Moral Formation among University Students

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Abstract

This study extends analysis of geographic literacy further by examining the relationship of geographic knowledge with the primary goal of geographic educators–cultivation of cultural understanding and moral sensitivity for global citizenry. The main aim is to examine contributors to moral formation during the university years based on a survey data gathered from 323 university students using a place identification quiz, relevant demographic data and two measures of moral development. Multivariate techniques are used to assess the strength of relationships between levels of moral formation and a variety of variables. Geographic knowledge is found to be significant predictor of moral development. Significant relationships also exist between moral formation and more work hours among students, fewer hours of television watched per week, and higher university class level. Responses to the measures of moral development confirm that women perceive and interpret moral situations in fundamentally different ways than do most men. Additional data analysis identifies important interaction between gender and travel amount such that women show a greater average difference between travelers and those that have not travelled than do males.

Keywords: geographic literacy, moral formation, multivariate analysis, Kohlberg, Gandhi

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Introduction

The principal argument for improving geographic literacy is to equip students to become better professionals and citizens in a globalized age. Thus, for example, the International Geographical Union's Charter on Geographic Education begins with this preamble: "Convinced that geographical education is indispensable to the development of responsible and active citizens in the present and future world" (IGU, 1992). Or, to illustrate geography's place in the university curriculum, Bjelland (2002, p. 401) emphasizes, "Thinking geographically widens our world, broadens the scope of our moral concerns, and increases the effectiveness of our actions." Similar claims –by geographic educators at all levels – are made on the basis of the same assumption; that geographic knowledge makes for more empathetic and ethical global citizens. This study examines this premise by way of primary data gathered from university students enrolled in introductory courses in world regional geography and international development studies. How strongly is knowledge of geographic location associated with empathetic compassion? And what other factors can be statistically confirmed to influence students' moral development as global citizens?

Research Design and Methods

Measuring geographic literacy has been the focus of three large international efforts in the last two decades. The InterGeo II paper test, a project of the International Geographical Union, was administered to more than thirteen thousand 14-year-old students from 23 countries in the early 1990s. The National Geographic Society financed a survey of 3,250 young adults between the ages of 18 and 24 from 9 countries in 2002. A face-to-face test was conducted with a series of show-card maps and multiple choice questions to assess map skills (navigational skills and place identification) and knowledge of geography related to world issues and current events (population, natural resources and weather, health, religion and politics, nuclear weapons, US immigration, and geography in popular culture). The International Geography Olympiad (2008) is the latest effort to measure geographical literacy. It is comprised of three tests – a traditional written test (40 %), a fieldwork exercise (40%) and a multimedia test (20%).[2] (See *www.geoolympiad.org* for examples of these latter two innovative methods.) Future studies of geographic literacy can be expected to rely on interactive maps and

[2] Under the auspices of the International Geographical Union the first International Geography Olympiad started in 1996 in the Netherlands with five European countries. Each of the 24 participating countries in 2008 in Tunisia consisted of a team of four secondary school students, aged 16–19 years, and two adult team leaders. The students were selected through a national competition (Schee, Notte, & Zwartjes, 2010).

geovisualization tools in an electronic environment (Schee, Notte, & Zwartjes, 2010).

The present study utilized the place identification portion of the National Geographic Survey of Geographic Literacy, which requires respondents to identify 38 countries on three outline maps (Europe, Asia, and the world), each labeled with random numbers. Although geographic literacy encompasses a broader array of skills than identifying country locations, place identification is recognized as a starting point or proxy for assessing geographic literacy (Torrens, 2001; Winship, 2004; Bein, Hayes, & Jones, 2010).[3] Lack of geographic knowledge, which first made headlines in 1983, spawned surveys of "geographic illiteracy" ever since (Hardwick & Holtgrieve, 1996, p. 2). And location is the first of four concepts which Gershmel identifies as the core constituents of geography: 1) location, i.e., knowing where things are; 2) place, i.e., understanding the unique character and differences of places; 3) links, i.e., knowing connections between different locations; 4) regions, i.e., comprehending spatial patterns, both formal and functional, at a larger scale (Gershmehl, 2005).

Standish (2009, 188) suggests a fifth core idea – understanding the human condition – could be added to Gershmel's well-known set. Although not unique to geography, our discipline does this primarily through: a) identifying and describing cultural patterns that arise in different social and natural circumstances; b) identifying and describing different landscapes shared by human ideas and actions; c) exploring the issues faced by people in different localities and under different physical circumstances (Standish, 2009, p. 188). It is in identifying with the human condition associated with specific locations that the two main themes of this study – location knowledge and moral compassion – link together. The National Geography Survey was administered to 18- to 24-year-olds, which matches the age category sampled for the current study.[4] A total of 323 undergraduate students at a liberal arts university in the state of Michigan (US) participated in this study.[5] Each one took the PIQ portion of the National Geographic Survey, plus a questionnaire aimed at locating variables that influence the development of moral values. Both the PIQ and values questionnaire were given as a pre-course survey on the first day of class. The results were first entered into an Excel spreadsheet, cleaned, and then exported to SPSS for multivariate analysis.

[3] Sketch mapping is relatively easy to administrate, but this approach poses considerable difficulty in assessing and quantifying the results (Saarinen & MacCabe, 1995; Cole, 2010).

[4] Roper Public Affairs and Media, a part of GfK NOP, conducted the survey2 on behalf of the Society.

[5] More than 85% of the respondents were enrolled in different sections of the typical introductory geography course, World Regional Geography. The remaining 49 students were enrolled in sections of another introductory course, International Development Studies. Women represented 71% of the sample population.

Starting in this manner generates immediate interest in the course because students are eager to see how their geographic knowledge compares to that of their same-aged peers in other countries as well as the United States. The collective results expose geographic illiteracy. For example, the proportion of which can find Iraq on the Middle East map usually falls below 40%, a result comparable to that of National Geographic's most recent survey, in which only 37% of 18- to 24-year old adults in the United States could find Iraq (National Geographic, 2006). Even fewer students can locate Afghanistan, Israel or Indonesia, despite considerable media coverage for those countries. An important series of discussion questions naturally follow. Why is it that wars or natural disasters do not appear to teach Americans geography? How then do we acquire and retain geographic knowledge? How strongly is knowledge of geographic location associated with empathetic compassion? What other factors influence individual's moral development as global citizens? How do university experiences – including the course at hand – contribute to the formation of life values? Raising with students the very questions that guide this study serves to make explicit for students from the start that a central goal of geographic education is to develop "an ability to act as an informed and active member of their own and global society" (IGU, 2000).

Two measures of moral development were chosen to measure the moral development of participants in this study. Both required continuous data so as to operationalize multivariate analysis and determine, from a statistical vantage point, what factors influence individual's moral development. The first measure was constructed on the basis of Lawrence Kohlberg's work. His stages of moral development, which is an extension of Piaget's cognitive-developmental theory, remains a centerpiece in the contemporary literature on moral development – both for debate and revision (see Kohlberg, 1981; Reed, 1997; Rest, Narvaez, Thoma, & Bebeau, 2000; Jorgensen, 2006). Working at Harvard's Center for Moral Development, Kohlberg identified six stages that characterize a "particular way or of giving form to the contents of beliefs and values" (Fowler cited in Morgan, 1989, p. 18). He conceptualized value development as a progression with different motivating foci (Figure 1).

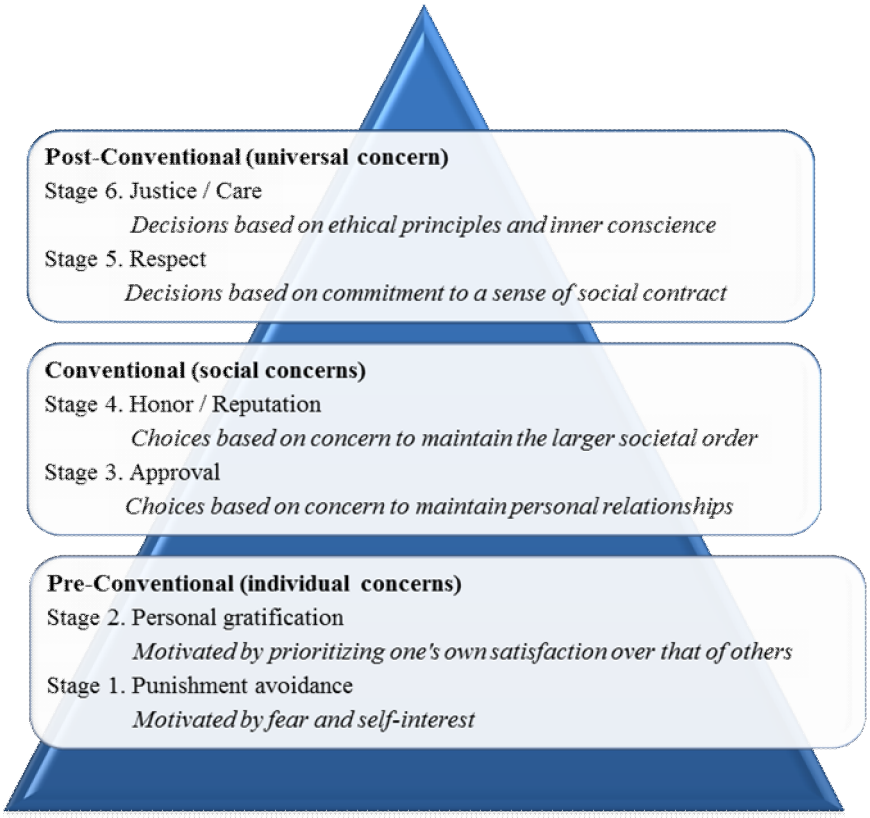

Figure 1. *Kohlberg's Moral Stages*

Kohlberg proposed that moral development occurs throughout the lifespan and his three categories–pre-conventional, conventional, post-conventional–are loosely associated with the basic life progression from child, to adolescent, and then to adult. Hence, the young adults generally move from the second conventional stage (#4) to the first post-conventional one (#5).[6] "Stage four and a half" –as Kohlberg

[6] It is important to acknowledge that Kohlberg's progression of six stages is a useful heuristic device to aid conceptualizing what is, in fact, an extremely complicated social, psychological, ethical, spiritual, and cognitive process. It is never as linear or simple as a progression suggest, or, as conclusive as an explicit, self-aware stance of knowing what one believes and why. It is not even guaranteed to occur; some individuals foreclose the process by adopting value systems from significant others without a process of personal, critical exploration and examination,

came to refer to that transition–is commonly sequenced with the post-adolescent university years. The university experience (both in the formal classroom as well outside it) provides an environment "to critically examine one's beliefs, utilizing third-person perspective and the internalization of authority" (Moes, Bussema, & Eigenbrood, 1999, p. 54). Doubt, confusion, ambiguity, contradiction, confliction, cynicism, and uncertainty characterize this "in-between period" as students wrestle through "identity crises" to "identity achievement" (Marcia, 1980).[7] Complicated as that process may be, value growth and moral authenticity result whereby, received convictions of childhood and adolescence are replaced with "earned" and "owned" ones for adulthood. "Stage four and a half quandaries … entry into the realm of global ethics; that is, from reliance on sociological conformity to other-oriented principles and human relationships that have the power to … transcend an individuals' immediate context" (Morgan, 1989, p. 15). It is precisely this kind of role in moral formation that geographic education has to offer; as stated in the IGU's Charter for Cultural Diversity, to strengthen people's ability "to see themselves as members of multiple overlapping cultures at local, regional, and global scales" (IGU, 2000).

Kohlberg's well-known research method for determining moral development (known as the Heinz dilemma) is to pose moral dilemmas to participants, obtain his or her response, and then identify the primary rationale for the choice. The present author constructed a Kohlberg-type scenario so as to locate where each student in the present study was "at" in the process of moral development. Each one chose one of six statements that best represented what their rationale for volunteering at a homeless shelter might be. Although presented in random order on the first-day value survey, each choice represented one of Kohlberg's six stages of moral development:

> "I know that we are supposed to help one another. If I don't do this, something bad may happen to me." – Stage 1

and, others avoid the process by remaining disinterested and detached from ever critically exploring beliefs, goals, or relationships (Marcia, 1980).

[7] Marcia's work (1980) amplifies further the frequently conflicted nature of stage four and a half. He argues that the quest for identity resolution, which frequently reaches a peak during the post-adolescent university years, can have different development pathways: **Identity Diffusion:** a disinterested or detached young adult who has not and is not critically exploring beliefs, goals, or relationships; **Identity Foreclosure:** an individual who has made commitments to a value system, vocational goals and more or less traditional lifestyles without a process of personal, critical exploration and examination. The foreclosed person has adopted an identity from significant others; **Identity Moratorium:** the individual possesses a "patchwork" identity, still undergoing change. The person in moratorium is actively exploring, testing, or experimenting in order to find out what they believe, what they want to accomplish in life, and what they are should become committed to; and, **Identity Achieved:** the individual who, after considerable reflection and examination has made commitments to a basic system of beliefs and goals.

"[Doing] this will make me feel like a generous person." – Stage 2

"My neighbors will think that I am really a good person if I do this." – Stage 3

"This is an act of good citizenship." – Stage 4

"These people deserve a chance to live on their own rather than endure the embarrassment of charity." – Stage 5

"Justice demands an equal chance to earn one's living. If I wish to be fully human, I can't ignore the needs of these people." – Stage 6

The second measure used to measure students' moral development complements the Kohlberg-based one. Respondents identified their level of agreement with each of seven ethical claims attributed to Mahatma Gandhi. In an article for *Young India* (1925), his weekly newspaper published in English for India's youth from 1919 to 1932, Gandhi included a list of seven social sins that a contributor from the Goa region of India sent him:

Politics without principles

Wealth without work

Pleasure without conscience

Knowledge without character

Commerce without morality

Science without humanity

Worship without sacrifice (Gandhi, 1958-1982, p. 135)

Gandhi then encouraged readers not "to know these things merely through the intellect but to know them through the heart so as to avoid them"–an important emphasis to note with respect to present study (Gandhi, 1958-1982, p. 135).

Students in this study indicated their level of agreement with each of the seven assertions, based upon a five-option Likert scale (e.g., politics without principles is sin = 1 (strongly agree), = 2 (agree), = 3 (neutral), = 4 (disagree), = 5 (strongly disagree)). Including the Gandhi measure was important because it addresses several criticisms of Kohlberg's theory: too dependent upon abstract moral reasoning and thus, biased toward a Western cultural and philosophical way of thinking; too focused on a justice orientation to the neglect of other aspects of moral reasoning such as compassion; and, too dismissive of religious faith as a significant

factor in shaping moral development.[8]

Students agreed most with wealth without work as a social sin (.411). Worship without sacrifice (.552) came next, then pleasure without conscience (.586), knowledge without character (.642), commerce without morality (.718), and finally, politics without principles (.727). A factor analysis of the seven individual statements produced only a single factor–suggesting that combining the scores into a total score for the Gandhi measure was a legitimate procedure. The total score for the two measures of moral development–Gandhi's and Kohlberg's–were significantly correlated with one another, with a high Kohlberg stage being related to more agreement with Gandhi's ethical statements (i.e., lower score) ($r=-.241$, $p < .001$).

A principal-components factor analysis was then used to determine if the pattern of correlations among the variables could produce a single common factor of moral development, but it did not. Tests of correlation were then performed to assess the relationship between all variables, including geographic literacy as derived from the map data. Several types of multiple regressions were then applied to the data comprised of all variables with continuous data. These regressions tested ten independent variables that might predict moral development as per the Kohlberg measure and the Gandhi measures – geographic literacy, gender, age, university class level, student major, length of time spent studying, length of time working, length of time watching television, length of time spent outside North America, and type of secondary school (public versus private). Using multivariate techniques provide a means by which to study the effect of each variable upon moral formation while taking into account the effects of all the other remaining variables (Figure 2).

[8] In the early formulation of his moral development theory, Kohlberg asserted, "We can conclude that religion is not a necessary or highly important condition for the development of moral judgment" (Kohlberg, 1981, p. 304).

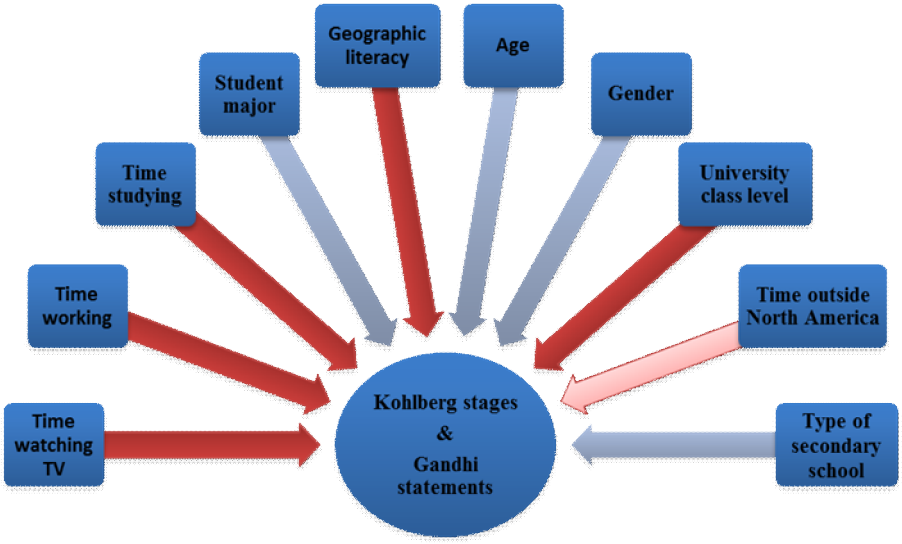

Figure 2. *Variables of Analysis*[9]

Results and Discussion of Findings

1. Students in the present study compare favorably to the U.S. cohort from the National Geographic Surveys. The average score on the 16-place world map (12.8) is substantially marked higher than the U.S. cohort (7.9), although only nominally so compared to Swedish and German peers (university students or not) (Figure 3).[10]

[9] The dark red arrows represent those relationships that are statistically significant ($p < .05$) while accounting for all other variables. The lighter red one represents the existence of a significant relationship, but one which exists only while not accounting for other variables. The blue arrows represent relationships which were tested by way of multiple regression, but did not prove significant.

[10] The world map tests sixteen locations–USA, Canada, Mexico, Pacific Ocean, Russia, Italy, Cuba, Japan, France, United Kingdom, Argentina, Egypt, Israel, Germany, Afghanistan, Sweden.

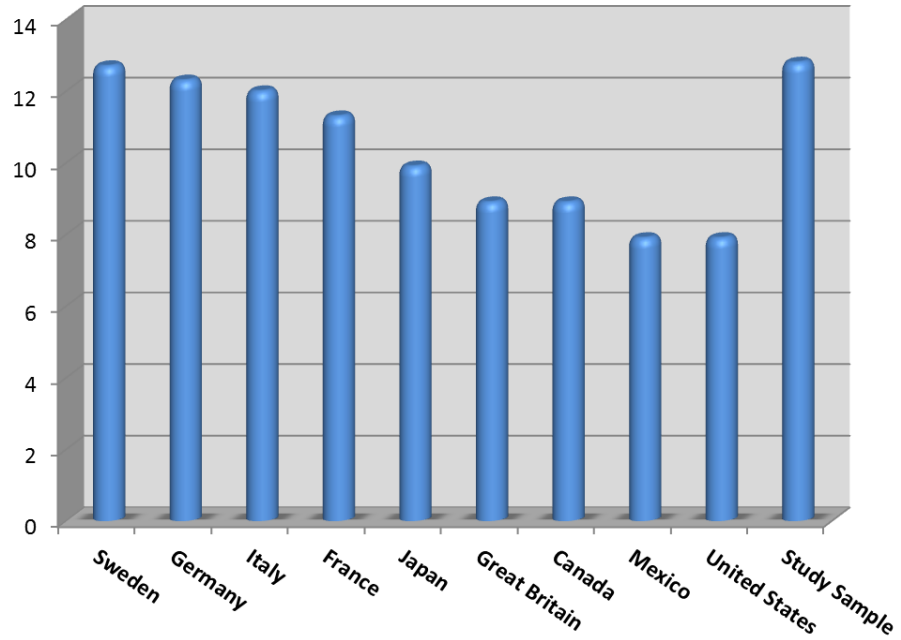

Figure 3. *Place Identification Results on World Map (16 Questions)*

Several factors account for differences between the United States cohort and the sample population (also in the U.S.). Clearly, university students (study sample) can be expected to perform better than the U.S. cohort, the many of whom were not in university. That more schooling improves geographic ability is no surprise, but the relatively high socio-economic status of the university students who comprise this study is an important factor as well. Only one study in the geographic literacy literatures examines the relationship between socioeconomic status and geographic literacy. Income data is sensitive and therefore, hard to obtain. Donovan's (1993) surveyed geographic knowledge among populations in three Dublin neighborhoods, which represented three general economic classes. He found that there was "a clear gradation in mean scores between lower, middle, and upper income levels." Students from wealthier households are usually socialized to think about their "world" in bigger terms. They are also likely to have more travel and study experiences abroad as well as more exposure to more forms of news media; factors which Winship (2004) confirmed – using a modified version of the 2002 National Geographic Survey – do result in higher levels of geographic knowledge.

2. Males perform better than females on the test of geographic ability, an outcome confirmed by previous studies (Winship, 2004; Bein, Hayes, & Jones, 2009). Men consistently outperform women, even after controlling for such factors as age (Beatty, 1989), education, travel history, and desire to travel (Beatty & Troster, 1987). Explanations for the gender gap can be found in the psychological, sociological, educational, and geographic literatures. Winship (2004) identifies four factors posited in these literatures: differences in cognitive style; differences in socialization such as early childhood training and parental expectations; differences in exposure to geography such as courses taken in school; and, differences in spatial ability related to human physiology and hormonal levels. A conclusive explanation for the gender gap is unlikely, but it is clear the typical way that geographic ability (i.e., country location maps as used in this study) is tested or measured favors males (Kitchin, 1996; Henrie Aron, Nelson, & Poole, 1997). If that place location maps are used to measure geographic literacy among university students, then majors dominated by males (e.g., engineering) can be expected to outperform those dominated by women (e.g., nursing and education), and, they do (Eve, Price, & Counts, 1994; Bein, Hayes, & Jones 2009). Absent better, more gender-reliable tests of geographic literacy, overstated prognostications are easily made. For example, Eve, Price and Countes (1994, p. 420) predicted "major and dire implications for the next generation of students [elementary and secondary]," based upon their finding of poorer scores among university students with education as their primary career choice compared to all others.

3. Moral development does have a significant relationship ($p<.05$) with geographic literacy (measured by the number of correct place identifications on the same maps used for the National Geographic / Roper assessment tool). A multiple regression (entry method) with Kohlberg's measure as the dependent variable found cores on the map quiz to be a significant predictor of moral stages ($t=2.1$; $p =. 04$).[11] A multiple regression with Gandhi's measure as a dependent variable confirmed the relationship further by way of total 3-map score ($t = -2.1$; $p = .04$). Thus, in answer to the lead-in question of this study–"Is one's geographic knowledge of where connected to a capacity to care?" –the answer is "yes". And that there is a relationship of map knowledge to the level of moral development – especially when the effect of other conditions is accounted for – suggests the importance of offering world regional geography in the university curriculum, especially at universities with higher commitments to the humanities and growing commitments to teaching virtues as well as knowledge and skills.

[11] Multiple regression also confirmed a significant relationship between moral stages and scores on the Europe map portion of the quiz ($t = 2.3$; $p = .024$) as well as scores on the Middle East / Asia map ($t = 2.1$; $p = .04$).

4. Responses to the two measures of moral development – the Kohlberg-type scenario and Gandhi's ethical views – confirm that women generally perceive and interpret moral situations in fundamentally different ways than do most men (Fowler, 2000, p. 29). Figure 4 summarizes responses to Gandhi's views based on gender and year in university.

Women have a lower average score (and thus more agreement) for the series of ethical positions. This finding is consistent with a major critique of Kohlberg's approach. Gilligan (1982) emphasizes that male identity formation focuses on separation and competition while women's socialization stresses connection and community (e.g., boys argue about fairness in games, girls cease playing games when a conflict occurs in order to save relationships). "Women," she argues, "seem to approach situations of moral choice with a tendency to see the actors and the affected parties in the situation as woven together in a web of relationships that has a history and an anticipated future – a web of relationships in time that can be expected to last.

Decisions about moral actions, therefore, have to be made in terms of their impact on the total web of relations, in the present and in the future" (Cited in Fowler; 2000, p. 29). That women in the present study affirm Gandhi's statements more than men is consistent with the fact that the Gandhi measure emphasizes a deeper sense of connectivity than the Kohlberg measure. Gendered differences in moral outlook were seen in surveys regarding rationale and approach for military action as a means of resolving international conflicts.

Women are less supportive than men of using war. In January 1991, U.S. women were far less supportive than men of going to war in the Persian Gulf. After September 11, according to *Washington Post* polls, only 55% of women, compared with 76% of men backed a military response "if 1,000 American troops would be killed" (Judis; 2002). Women's opposition stemmed not only from a fear of casualties but also from dissatisfaction with the administration's unilateral strategy. In a Gallup Poll, women placed more importance than men on whether "at least some Western allies" support the administration's action; only 12% thought that the United States should send troops even without the backing of any allies (Judis, 2002). The campus newspaper at the study site polled a sample of one hundred and sixty-two students in the early days of the recent Iraq – "Are you for or against the war in Iraq?" Men were 61% in favor for the war compared to 30% of the women (Wenstrom, 2003, p. 1).

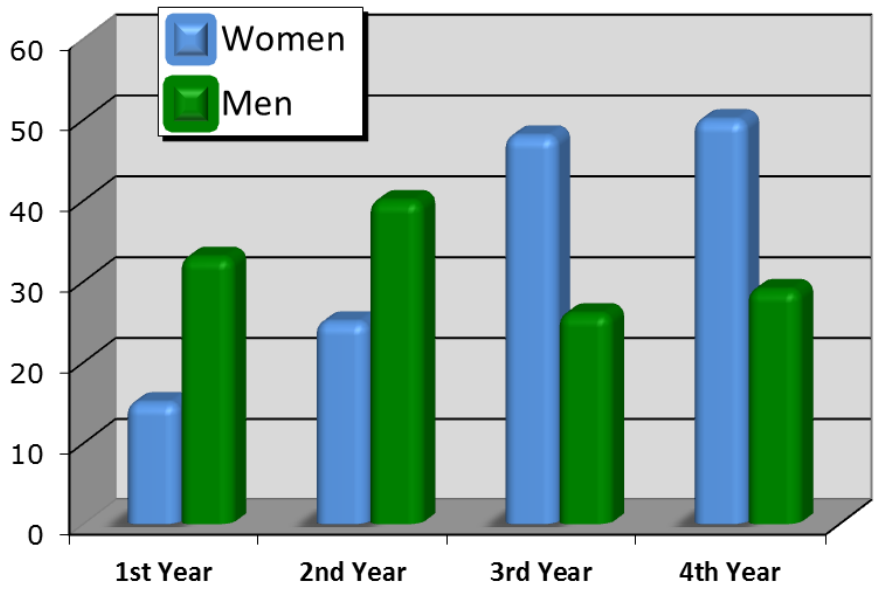

Figure 4. *Gandhi's Ethical Views–Mean Total Score (Low Total=More Agreement)*

5. Varying responses to the two measures – Gandhi's ethics and the Kohlberg-type scenario – suggest the importance of using multiple tools to assess moral development. The two measures featured in this study mirror the classic debate between Kohlberg's perspective, situated around the principle of justice and Gilligan's approach situated around the ethic of care. Women scored higher on the Gandhi measure than did men, which suggests that women generally interpret moral dilemmas as a problem of conflicting responsibilities associated with lived relationships (better reflected in the Gandhi measure) as compared to men, who more often approach moral dilemmas in terms of abstract rights (reflected in the Kohlberg measure) (van der Ryn, 2007). Hence, the two measures are best seen as a complementary rather than competing with one another.

6. Although not a statistically significant relationship and thus subject to other variables, the data suggest a trend for the Kohlberg stage to be higher with more time spent outside of North America ($r = .26$, $p = .008$). Figure 5 is a histogram, which uses the total map scores to compare the effect of time outside North America–categorized in terms of very little, some, and extensive – between men and women. Women show a greater average difference between travelers and non-travelers than do men. This variance may be at least partly explained by the fact that

moral formation through relational engagement with particular people and situations during overseas travel – more commonly occurs among women than men (van der Ryn, 2007).

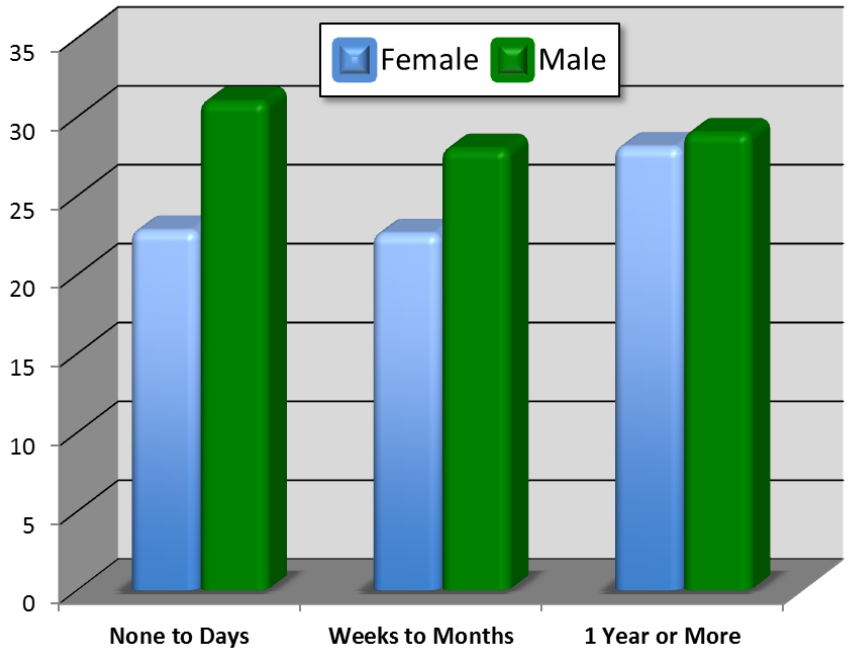

Figure 5. *Geographic Knowledge and Foreign Travel (Number Correct of 39 Map Questions)*

The National Geographic Literacy Survey supports the fact that geographic knowledge does increase through travel. In the highest scoring countries – Sweden, Germany, and Italy – at least 70% of the respondents had traveled internationally in the last three years (National Geographic, 2002, p. 3). In the US, only about 20% had traveled abroad during the same period.

7. Three variables associated with student's time use enter into the regression equations. Figure 6 summarizes what students in the sample report in terms of hours per week spent working, watching TV and studying. Based on predicting the Gandhi regression, more hours of work per week has the strongest effect on moral development (t=-2.94; p= .005). Our students have less for-pay work experience than do students attending private or public universities nationwide. Roughly the

same percentage of students at the present study's university (73%) worked for pay during their senior year of high school as those at public universities (73%) and other private universities (31%). However, only 5% of said they were working 20 hours a week or more in college, compared to 19% of those at public schools and 15% of those at other private institutions[12]. Work can enhance time management and promote moral development. Sixty-nine percent of respondents said they worked for pay, and those who did work, reported an average of 11.8 hours per week. Students, who work more, appear more likely to identity with those in poverty in North America.

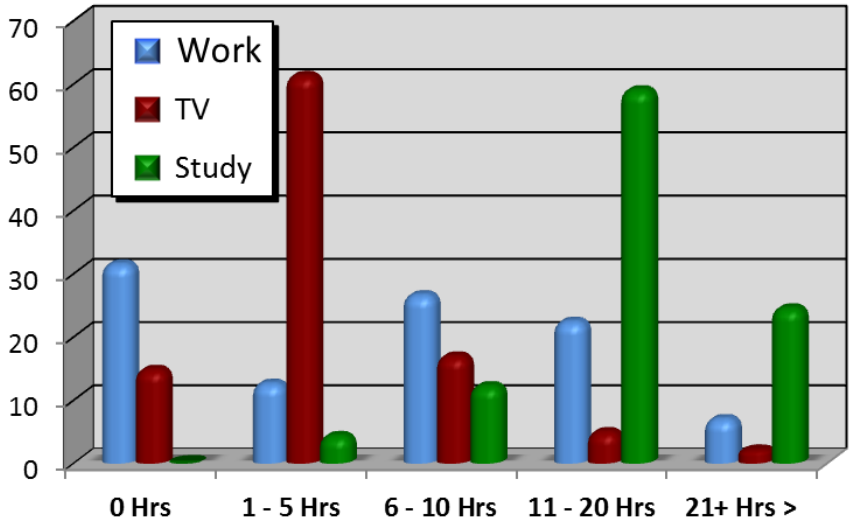

Figure 6. *Time Use at University – Hours of Work, Study, Television per Week (Percent of Students in Time Use)*

Respondents report an average of 4.7 hours per week of television time. A significant, inverse relationship exists between moral development and hours of watching per week (t=2.25; p = .028). The regression based on the Gandhi measure suggests that TV time promotes moral passivity. Moral passivity and geographic illiteracy are As would be expected given the significant relationship between moral development and geographic knowledge discussed above, Winship's study of geographic literacy at another US university (n=427) found that that mean quiz

[12] Asking respondents to identify the character of the work–in addition to total work hours per week–could have strengthened the analysis further.

scores depended upon respondents' primary new media source. The only statistically significant differences are between those who rely most on network news compared to other sources, and, they scored lower (32.8) than those who rely on news magazines (34.0), Internet (36.1), cable news (36.2), commercial radio (36.3), newspapers (37.2), and public radio (38.2) (Winship, 2004, p. 101). This appears to confirm Beaudoin's study (2008), which found that network TV has a non-significant effect upon international knowledge, in general.

The Kohlberg regression predicts that the amount of time spent studying has a significant positive correlation with higher moral stages ($r = .26$; $p = .008$), but only when other variables were not accounted for. The 2002 National Study of Student Engagement (NSSE), a survey of study habits from 366 universities, reported that the largest percentage of first-year students and seniors – 36% – study 11 to 20 hours per week and 28% more study more than 21 hours per week (Anderson, 2004, p. 18). Nearly 60% of students in the present study reported studying between eleven and twenty hours per week. Do their intellectual efforts improve morality? This data suggests only marginally so.

8. Statistical analysis produces mixed results as to whether progress in the moral development process occurs over the course of four university years. The total Gandhi score does improve from the freshmen to the fourth year (Figure 4). Seniors have lower average scores (more agreement) than freshman, sophomores or juniors ($t = 2.4$; $p = .02$). That university seniors in this study demonstrated substantial moral growth (via the Gandhi measure) suggests that the total university experience does aid young adults recast their values.

Although the regressions produce no effect of university class ("grade level") or gender on the level of moral development (Kohlberg's measure), a test of between-subject effects finds a significant interaction of class and gender combined together with Kohlberg's stages as the dependent variable ($F = 3.7$; $p = .014$). Figure 7 provides a illustrative summary – in terms of gender and university year – for those whose answer to the Kohlberg-type scenario was associated with the fourth, fifth, or sixth stages.

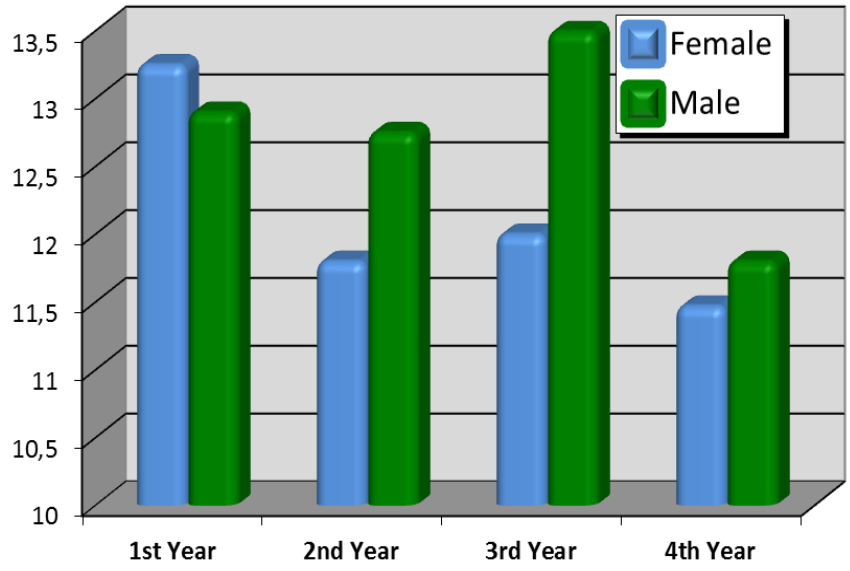

Figure 7. *Kolhberg's Moral Stages (Percent above Stage 3)*

The percent of women above Stage 3 starts low, but shows a significant increase from the freshman to the senior year, while males start higher and actually decrease. The first finding is consistent with Moes, Bussema, and Eigenbrood (1999, p. 64), who found that female undergraduates scored significantly higher – on six measures of development growth – than male students, and that female students posted slightly higher gains (although not significantly so) between their freshman and senior years. Likewise, it is consistent with Rest, Narvaez, Thoma and Bebeau (2000, p. 390) who found "large gains" among women in their study of freshman to senior students at liberal arts universities.

Surprisingly, however, although male students in the present study begin university at a higher average stage in Kohlberg's schema than female students, the data suggests that their moral development actually decreased by their senior year as compared to their freshman year. Whether a relatively small-sized sample of senior men (n = 7) may have compromised this finding is not clear. But these results do open lots of speculative questions. What of the strong suggestion posed by these data that moral growth among men is retarded during their university experience? Worse yet – for some reason(s) – might their university experience actually

contribute to this regression? Or is the association mere happenstance? Or does the Kohlberg scale not capture some forms of male development that do take place?

Conclusions

This study extended analysis of geographic literacy further by examining the relationship of geographic knowledge to the primary goal of geographic educators; namely, cultivation of cultural and moral sensitivity associated with global citizenry. This fundamental assumption – that geographic knowledge is associated with moral concern – was tested using multivariate analyses to identify contributors to moral formation and apparent non-contributors. A multiple regression analysis between Gandhi's ethical assertions and the independent variables found a relationship at the 95% confidence level for map knowledge – when the effect of the other variables was accounted for. Better map knowledge was a significant predictor of the Kohlberg level of moral development as well. Thus, place location knowledge was found to be a significant predictor for higher levels of moral formation among university students. Higher university class level, more time working, and less time watching television also were found to be significant predictors of moral development, but a number of would-be contributors did not prove significant in terms of statistical confidence on either measure – age, gender, student major, length of time spent studying, length of time spent outside North America, and type of secondary school.[13] However, additional analysis did find important interaction between moral formation and gender as well as with time devoted to study, and among gender, travel experience, and levels of moral development.

To conclude, why teach geography? The dominant rationale today is to equip students to become better professionals and citizens in a globalized age. Standish (2009) provides a bold challenge to that premise. He argues that such an approach fundamentally undermines the intrinsic worth of geography as a discipline because using geography as a tool for citizenship is dedicated to an ulterior or extrinsic purpose. Nevertheless, geography courses do deliver the kind of skills, intercultural understanding, and values that prepare students to adapt and change in the culturally diverse and economically connected world of the future (Casteen, Gibson, & Lampkin; 2007, p. 1). Geography's versatility means that our discipline serves the university academy in many ways – as a social science, a physical science, and as a spatial one – but also as a humanity, which "frees students from the confines of their

[13] An additional, non-parametric test (Kruskal-Wallis) found no significant difference between level of moral development and student major whether in education, sciences, humanities, the social sciences, or "professional" programs such as engineering and computer science. This finding supports the main conclusion of Derryberry, Snyder, Wilson, and Barger (2006) that notable differences in moral judgment do not exist among majors.

own time and place" so to look and see beyond oneself in a deep, empathetic and ethical sense (Siddall; 1979, p. 128). To ask who are my global neighbors? What is right and just for them? How shall we live in view of their needs? In sum, this kind of geographic education develops attitudes and values as well as skills and knowledge.

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