



Historical and Contemporary Synopsis of the Development of Field Education Guidelines in BSW, MSW and Doctoral Programs

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| Author(s): | <i>Chonody, Sultzman, and Baffour</i> |
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A Scoping Review of College Student Attitudes' Toward the Environment: Implications for Integrating Environmental Justice Education into Social Work

Chonody, Sultzman and Baffour

Abstract

Social work is strongly committed to environmental justice, and in the US, changes to educational policy are reflective of this allegiance. No comprehensive literature review of the environmental attitudes of college students is currently available. The present study redresses this gap by undertaking a scoping review. Results (N= 25 articles) demonstrate that students are moderately concerned about the environment and report three to five pro-environmental behaviors. Environmental education is essential to the mission of social work and allied professions that address vulnerable and oppressed populations. Thus, this study can potentially inform pedagogical interventions in classroom and continuing education settings.

Introduction

The reality of global climate change continues to be a debated and contested issue within the sociopolitical arena, and despite the pressing need for environmental action, policymakers in the United States have shifted toward an agenda that is dismantling important protections for air, water, and land (e.g., national parks). The current administration couches environmental protections as a limitation of capitalistic enterprise, and this is cause for concern not only for the environment itself, but the potential influence that these beliefs may have in influencing the environmental attitudes of the American populace. Negative and inaccurate messages minimizing the need to address environmental issues, and the stripping of policy aimed at its protection, could lead to environmental skepticism and a decrease in pro-environmental behaviors (Dunlap & McCright, 2011). This is worrisome given that progressive attitudes toward the environment are of paramount importance if we are to address present and future environmental challenges.

Recent reports by the Pew Research Center state that most Americans (74%) believe in

climate change, and adults under 30 years of age versus those aged 65 years and older are more likely (64% to 48%) to rank the need for environmental protections as an important and serious issue (Anderson, 2017). Results examining global opinions about climate change found that Americans 18 to 29 years of age were more likely to view global warming as a major problem (52% to 38%) than individuals aged 50 and older (Stokes, Wike, & Carle, 2015). Data from a national survey examining climate change perceptions among young Americans suggested that individuals 18 to 34 years of age were divided in their views, with traditional college-aged students (18-22 years old) expressing more concern about climate change than 23-34-year-olds (Feldman, Nisbet, Leiserowitz, & Maibach, 2010). Similarly, Cordero, Todd, and Abellera (2008) found that college students participating in their study were very concerned (80%) about the environment. While results from these reports indicated that college-aged students were concerned about the environment, studies have also shown that they hold misconceptions regarding the causes of climate change and are less engaged in pro-environmental behaviors than their older counterparts (Cordero et al., 2008; Feldman et al., 2010; Gifford & Nilsson, 2014). Evidence from the literature suggests that post-secondary education can play a key role in ensuring that students acquire accurate knowledge about the causes of climate change and other issues impacting the environment, thereby increasing their pro-environmental behaviors. Environmental concern is of significant importance to social workers and is part of their charge, in particular environmental injustice.

The Educational Policy and Accreditation Standards (EPAS), which are determined by the Council on Social Work Education (CSWE, 2015), guide social work education in the U.S., and a recent addition to the EPAS included a definition of environmental justice in the glossary. This definition reads as follows: "environmental justice develops when individuals

Jill Chonody, PhD, is an Associate Professor of Social Work at Boise State University

Vicky R. Olds Sultzman, PhD, is an Assistant Professor of Social Work at Indiana University Northwest

Tiffany Baffour, PhD, is an Associate Professor of Social Work at The University of Utah

are not disproportionately affected by environmental hazards; are treated equally with regard to environmental protections; and are involved in the decision-making process for environmental policies.” The extent that this is part of the curriculum and, in turn, that social work students are being trained to engage in environmental issues, is relatively unknown. Similarly, the knowledge that practicing social workers have about the environment and their role in protecting it and humans who are being impacted by environmental change is relatively unstudied, and a search of popular online continuing education services (e.g., National Association of Social Workers [NASW]) yielded only one “lunch and learn” session equivalent to one continuing education unit (CEU), which was just added in January 2020. This search was not exhaustive, but the focus on clinical training is readily apparent when browsing these websites.

Social Workers’ Concern for the Environment

To understand more about how social workers feel about environmental practice, we turn to the literature in this substantive area. Only three studies with American social workers were found, thus we review each herein. In small and older study, NASW members in New Mexico (n= 61) were surveyed along with registered social workers in South Africa (n= 52). Results indicated that about 70% of the participants reported that environmental issues were important to social work, but only 46% included this as part of their practice; lack of education was one of the reasons that were given as to why they did not (Marlow & Van Rooyen, 2001). Two more contemporary studies were identified, which may provide a bit more insight into where we are today. In a random sample of NASW members (N= 373) social workers were found to hold moderately pro-environmental worldviews, but 90% of the participants supported the inclusion of environmental issues as a component of social work practice (Shaw, 2011). Additionally, a majority of the participants (90%) reported that environmental concerns were part of their practice even though only 32% indicated that they had received any education on the topic. These findings were replicated in a 2015 survey of licensed social workers from one state (N= 373) in that participants endorsed high levels of

support for the inclusion of environmental justice in social work practice (Nesmith & Smyth, 2015). Moreover, a large proportion of respondents indicated that they had worked with a client who was facing an environmental injustice issue (e.g., food desert, lead poisoning, air pollution). More education on environmental issues would benefit the profession, as these practitioners are suggesting that they are working with these problems despite the fact that they did not receive any training or education on them. Additional research into this issue amongst practicing social workers is needed, as is the development of CEUs. Only three studies were also found within the social work literature regarding student attitudes toward environmental issues; thus, we sought to complete a scoping review of the broader literature to learn more. Our study, therefore, focuses on what we can learn about current environmental attitudes and educational efforts aimed at addressing biases/gaps regarding the environment, as this can inform pedagogy both within schools of social work as well as continuing educational efforts that can enhance practice and, in turn, the profession.

Current Study

Education about the environment and its changes have been shown in some studies to influence college students’ attitudes toward the environment and their pro-environmental behaviors (Anderson et al., 2007; Cordero et al., 2008; Duerden & Witt, 2010). Studies examining the relationship between level of education and concern for the environment found that individuals with higher levels of education tend to be more concerned about the environment, and college graduates are more likely to endorse and commit to engaging in pro-environmental behaviors (De Silva & Pownall, 2014; Gifford & Nilsson, 2014; Meyer, 2015). Garnering a greater understanding of the way in which students can be taught to be champions of the environment and the science that supports the way that it is changing is a significant task for a range of academic disciplines, including social work. Before tackling the task of pedagogy, a better understanding of the factors related to students’ attitudes about the environment as well as how to change negative attitudes or false beliefs area necessary first steps. The literature in this

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substantive area is diverse and includes students from many different majors with a wide range of foci beyond environmental attitudes, such as animal welfare, childbearing, and property rights, so we sought to understand environmental attitudes in general. At the time of this writing, a comprehensive review of studies on college students' attitudes toward the environment had not been identified. Thus, a scoping review was undertaken with the aim of summarizing the evidence in this substantive area, identifying gaps in the literature, and providing research and educational suggestions for moving forward. These results can also inform techniques for developing appropriate continuing education for social workers who may not have had any education on environmental issues, or environmental justice in particular.

Method

Arksey and O'Malley (2005) suggest that the goal for a scoping review is the synthesis of materials that map an area of research, particularly when a comprehensive review is not available. Thus, such a review seeks to compile evidence from the literature in order to answer a specific research question with the aim of generating a synthesis based on existing knowledge, not to critique methodology (Arksey & O'Malley, 2005). Levac, Colquhoun, and O'Brien's (2010) five-stage framework was utilized for this scoping review. In the first stage, we developed our research question, which was: What are college student attitudes toward the environment? Using this question to guide our search of the literature (stage 2), academic databases (ProQuest) and Google Scholar were searched using the terms student attitudes, environmental concern, environmental justice, environmental attitudes, environmental behavior, and environment. Articles were limited to studies that included college students as their sample and were published in English from 2007-2017. We decided to use a 10-year time frame in order to capture a distinct time period, but one that was also contemporary, as attitudes toward the environment continue to shift as exposure to information and political debate are included in mainstream media. Stage 3 of this framework is the iterative process of study selection. Once potential abstracts (840) were identified from our

searches, each researcher reviewed the abstract and indicated whether or not it should be included in the review. A total of 152 articles were identified for possible inclusion.

Next, the researchers met to discuss these results, resolve conflicting opinions on the study, and achieve a final list of articles. We had initially sought to include studies from other countries, but after further discussion we concluded that this would not result in a cohesive scoping review in that cultural contexts are important in understanding college students' attitudes. The list of 152 articles included many international studies, which were then excluded, and we limited the articles for this review to the U.S. and Canada. After the discussion to identify articles, 30 were found to meet the inclusion criteria. Charting the data (stage 4) was achieved through the creation of a data extraction form that each of the researchers helped to develop. After all of the articles were found and downloaded, each reviewer independently extracted data from the first three articles on the list as suggested by Levac et al. (2010) to determine if extraction was consistent with our purpose and the research question. Any uncertainties regarding data extraction were discussed, and the article was revisited as necessary. In the final stage of collating, summarizing, and reporting results, we set out to generate a report of our findings. Through the process of reading the articles in their entirety, five additional articles were eliminated, bringing our total to 25. In Table 1, a summary of each article can be found, and a summary of the results follows.

Results

Given that the aims for most of the studies reviewed were not solely focused on environmental attitudes, summaries for various types of results are provided. We begin with environmental attitudes, which is followed by environmental behaviors, because these two areas were of primary interest. Results related to knowledge, including pre/posttest designs, sociodemographic correlates, and other environmental findings, are also summarized. Additional details on study aims, methods, and results can be found in Table 1.

Attitudes

Across the 25 studies, students' attitudes toward the environment were moderate to moderately positive. Many of the studies ($n = 11$) used Dunlap, Liere, Mertig, and Jones' (2000) New Environmental Paradigm (NEP) scale to measure environmental attitudes. This 15-item scale is used to assess the degree to which a pro-ecological perspective is supported. The scale includes several environmental issues, including the balance of nature, limits to growth, anti-anthropocentrism, human exceptionalism, and eco-crisis. Since researchers used different versions of the NEP or used just portions of this 15-item scale, the mean score for the summed scale could not be compared across studies. While some researchers reported item means, other just provided the mean for the scale. In the case of the latter, we calculated the mean item score to draw conclusions about attitudes.

One study utilized a 4-point Likert-type scale, and the average item score on the NEP for that study was 2.72 (Lang, 2011). For researchers who used a 5-point Likert-type scale, mean scores across items on the NEP ranged from a low of 3.12 (Faver, 2013) to a high of 3.81 (at posttest; Kuo & Jackson, 2014). All of the other studies fell within this range (Arnockey, Dupuis, & Stroink, 2012; Levine & Strube, 2012; Miller & Hayward, 2014). Ruff and Olson (2009) only provided ranges by subscale, but these were close to the above, albeit the sustainability range was a bit lower (range: 3.25-4.01 for the ecology subscale; range for sustainability subscale: 2.32-3.34). Similarly, Schneiderman and Freihoefer (2012) provided mean item scores by subscale only, but these averages were very similar to the studies cited above (range = 3.50-4.05). Finally, Cordano, Welcomer, Scherer, Pradenas, and Parada (2010) employed a 7-point Likert-type scale, and the mean item score was 4.86. These item averages illustrate that across studies students' pro-environmental attitudes are moderate to moderately high.

Environmental concern/beliefs. Overall, students were found to rank the environment highly when asked to rate it amongst other problems or were moderately to very concerned about the environment (Ermolaeva, 2010; Faver & Muñoz, 2013; McKercher, Prideaux, & Pang, 2012; Ruff & Olson, 2009). Lee (2008) found higher mean scores on the following: when

humans interfere with nature, it usually leads to disastrous consequence; plants and animals have the same rights as humans to exist; humans severely abuse the environment. Similarly, Faver (2013) reported that 95% of students surveyed endorsed the belief that "humans are severely abusing the environment." Other findings suggest that variability in environmental beliefs and solutions amongst students exist. In one study, students were found to only moderately endorse pro-sustainability (Ruff & Olson, 2009), and in another study, only 7% of the sample fell into the top quartile for sustainability attitude scores (Valdes-Vasquez et al., 2014).

Climate Change. Three studies specifically included attitudes or knowledge about climate change. Jamelske, Barrett, and Boulter (2013) reported that 77% of American students in their sample believed that climate change is happening, with 59% believing that humans are contributing to it. Only 40% endorsed that most scientists think climate change is caused by human activity, and 52% believe that there is a consensus amongst climate scientists that climate change is occurring. Relatedly, Wacholz, Artz, and Chene (2014) found that 75% of the sample believed that climate change was occurring and due to human impact, and around two-thirds were very concerned about climate change. Lastly, McKercher et al. (2012) found that 80% of the students surveyed viewed climate change as a major issue, but only one-third could identify direct and specific causes of climate change.

Pro-Environmental Behavior

Unlike environmental attitudes, which were relatively moderate when they were measured by the NEP, pro-environmental behaviors were moderately high to high in the 10 studies where they were assessed. The way that this behavior is measured differed from study to study, but overall, the results are quite positive across them. In a number of studies, researchers asked participants to respond to a list of behaviors to affirm or deny them. Faver and Muñoz (2013) reported a range of positive responses (27-95%) to five pro-environmental behaviors, whereas Ermolaeva's (2010) results indicated that students reported performing five of the nine pro-environmental behaviors listed, with less than 3% of the sample reporting that they did not conduct any. Similarly, Miller and Hayward

(2014) found a moderately high number of environmental actions were being performed by their students ($M= 5.6$; range: 1-17), but for Levine and Strube(2012), this was even higher given the range; that is, the average number of environmental behaviors was 3.35 with a range of 1.18-4.82. Additionally, 75% of students reported recycling in Ruff and Olson's study (2009). Watson, Hegtvædt, Johnson, Parris, and Subramanyam's (2017) results were more moderate. They measured recycling behaviors using a four-item scale with a 7-point Likert-type scale and an eight-item conservation behaviors scale. The item mean for recycling was 4.35, and the item mean for conservation was slightly higher at 4.64.

Nonetheless, other the results in this area were somewhat less promising. Wacholz et al. (2014) reported that only 15% of their sample indicated that they take actions to reduce global warming, and only 7% of Valdes-Vasquez et al.'s (2014) sample ($N= 6,772$) fell into the top quartile for their behavior and their attitudes. While McKercher et al.(2012) found that 69% of their sample said "yes" to changing behavior within the past three years to reduce their environmental footprint, many of the changes listed were either nonspecific or superficial, such as "living a more green lifestyle." However, when students could correctly identify direct causes of climate change (e.g., fossil fuels), they were more likely to be specific in their action (e.g., drive less or use public transportation). Likewise, Wacholz et al. (2014) found that concern about the environment was not reflected by changes in behavior, with only 15% of the sample reporting behavioral changes.

The extent to which students participate or intend to participate in pro-environmental behaviors were associated with more pro-environmental attitudes in some studies (Cordano et al., 2010; Faver & Muñoz, 2013; Miller & Hayward,2014; Watson et al., 2017). Additionally, Watson et al. (2017) assessed several factors related to campus and found a number of positive associations. Perceived authorization by the university of environmentally responsible behaviors had a significant correlation with students reported frequency of recycling and conservation behaviors. In addition, perceived endorsement of conservation positively affected conservation behaviors as well as perceived peer

endorsement. Lastly, living on campus had a positive association with perceived endorsement of recycling.

Knowledge and Education

Four studies assessed knowledge or education on the environment in some way. Faver and Muñoz (2013) reported that the extent to which students felt informed about the environment was moderate, while Jamelske et al. (2013) found that 70% of the American students in their sample reported that they were not at all or not very familiar with international policies to address the climate. In Ermolaeva's (2010) study, 84% of the students surveyed positively rated the quality of their environmental education, and their self-reported knowledge on the environment was 6.78 (10 point scale). Additionally, 76% indicated that they were interested in information about environmental issues and recognized a variety of threats to the environment (e.g., destruction of wilderness and forests; air pollution; consumption).

Fisher and McAdams (2015)found that the type of courses students took was significant in they way that they defined sustainability, and student understanding of sustainability tended to focus on environmental factors. The number of courses that they had taken however did not have an impact. It appears that exposure to specific content instead of the amount of exposure is more relevant. In addition,45% reported that they had zero courses on sustainability, and 41% had one or two. Concrete knowledge also had a significant effect on recycling, water conservation, use of electricity-efficient appliances, and routine behaviors to conserve electricity in one study (Segev, 2015). In another study, those who indicated more knowledge about the cause of climate change were more worried than participants with less knowledge (Wacholz et al., 2014).

Pretest/posttest results. Three studies used a pretest/posttest design to determine changes in attitudes after an educational presentation. All three studies reported at least some significant change. Schneiderman and Freihoefer (2012) reported that students' awareness of human jurisdiction regarding human ability to create sustainable technologies for interior design improved after the implementation of an educational program. Webb and Hayhoe (2017)

found a significant increase in climate change beliefs after hearing an educational presentation. This presentation was offered in different modalities (e.g., pre-recorded), but the modality did not matter in creating change. Lastly, in Kuo and Jackson's (2014) study of engineering students, results indicated students' attitudes had significant positive changes from pretest to posttest, in particular their attitudes related to the ecological crisis, resource limitations, and the fragility of the balance of nature. However, no changes in their understanding regarding human dominance over the environment or their belief in human inventiveness as a means to overcome environmental challenges were found.

Sociodemographic Correlates

Educational status. Six studies made comparisons between groups of students based on their year in school. Three studies reported no differences in environmental concerns overall based on educational status (Faver, 2013; Faver & Muñoz, 2013; Fisher & McAdams, 2015). Three other studies did report differences, with those students who had been in college longer reporting more pro-social attitudes about the environment (Lertpratchya, Besley, Zwickle, Takahashi, & Whitley, 2017) and incoming freshman majoring in business espousing less pro-environmental attitudes (Lang, 2011). Chesnes and Joeckel (2013) found that seniors and graduate students had a number of significantly greater environmental beliefs, including acknowledgement of the role of humans in climate change, likelihood of participating in pro-environmental behaviors (including recycling), willingness to reduce their standard of living to help protect the environment, and recognition of their role in impacting the environment in a positive way. However, Lertpratchya et al. (2017) reported that freshman affirmed greater recycling behavior in their study. Similarly, freshman reported more environmentally friendly transportation choices. Nonetheless, students in their junior and senior year demonstrated more positive attitudes about food choices that help the environment than students in their sophomore year.

Age. Results regarding age are inconsistent, and in part, age is a challenging variable when studying college students as sometimes it can be an indicator of greater exposure to content; but

this is not always true given that nontraditional students comprise a certain percentage of the college population. For three studies, no age differences on concern for the environment were found (Arnockey et al., 2012; Faver, 2013; Faver & Muñoz, 2013). In one study, students who were older were found to report that they were more knowledgeable about the environment (Levine & Strube, 2012), and in another study, age was positively associated with environmental value (Segev, 2015).

Gender. There is also some inconsistency in the findings regarding gender and environmental concern, and it seems what is asked is quite important in the results. Women tend to express more support for the environment (Lopez, Torres, Boyd, Silvy, & Lopez, 2007; Wacholz et al., 2014), interest in sustainability (Valdes-Vasquez et al., 2014), engagement in environmentally responsible behaviors (Watson et al., 2017), willingness to pay higher fees for more environmentally sustainable services on campus (Lang, 2011), and believe that climate change is caused by humans (Jamelske et al., 2013).

It appears that men tended to report greater knowledge about the environment or being more informed on the issue (Faver & Muñoz, 2013; Levine & Strube, 2012) or policies impacting the issue (Jamelske et al., 2013). In four studies, no gender differences were found for explicit environmental attitudes (Faver, 2013; Faver & Muñoz, 2013; Kuo & Jackson, 2014; Levine & Strube, 2012).

Religion. Only two studies analyzed issues of religion in a general study of environmental attitudes. Arnockey et al. (2012) found no associations at the bivariate level between pro-environmental attitudes and religious affiliation. Alternatively, in a study of Latinx students, Lopez, Torres, Boyd, Silvy, and Lopez (2007) found a negative association between religiosity (as measured by church attendance) and environmental concern. On the other hand, Chesnes and Joeckel's (2013) study exclusively focused on student enrolled at Christian colleges. They found that 95-97% believed that it is important for Christians to care about the environment; however, the more conservative the theological beliefs, the less participants acknowledged pro-environmental beliefs, such as the degree to which the evidence for human-induced climate change is convincing; the

role of human activity in influencing climate change; and doing what is “right” for the environment even if it costs more money or takes more time. Interestingly, theology students were found to be least likely to recycle, to do what is “right” for the environment, and be willing to sacrifice to protect the environment. They also found that students who were homeschooled or attended a private, Christian high school were least likely to believe that climate change is influenced by human activity. Lastly, homeschooled students were the most likely to recycle, but students who attended public high schools were the most likely to make sacrifices for the environment.

Political position. Political ideology was evaluated in five studies, and identifying as a liberal was found to be associated with greater environmental concerns (Fisher & McAdams, 2015; Lang, 2011; Wacholz et al., 2014). Lang (2011) also found that liberal students were more likely to indicate that they would be willing to pay higher fees for more environmentally sustainable services on campus. Jamelske et al. (2013) found that those who identified as conservative were less likely to believe in climate change; that it is caused by humans; that climate scientists agree about its occurrence; and that there is a consensus among scientists that it is being caused by humans. Finally, Lopez et al. (2007) found that the degree of importance of a political candidate’s position on the environment was positively associated with environmental attitudes.

Academic major. Four studies explicitly compared students by their academic major, but two other studies are included here as they provided an analysis based on course enrollment or focus within a major. In a study of African American students, Lee (2008) found that science and pharmacy majors were more likely to agree that there is serious global ecological crisis than other majors. In another study, engineering students were found to be less supportive of the environment when compared to other majors (Kuo & Jackson, 2014); and in a similar study, applied science majors (e.g., nursing, social work) expressed more concern about the environment than business majors (Wacholz et al., 2014). Major was found to be a significant factor impacting NEP scores in Lang’s (2011) study, with incoming freshman who were business

majors scoring significantly lower on measures of environmentalism, even when gender, political ideology, and financial security were accounted for. Schultz, Simpson, and Elfessi (2011) found that students enrolled in recreational courses were significantly more egocentric and less eco-centric than students enrolled in environmental studies courses, while Miller and Hayward (2014) found that macro-oriented social work students (e.g., policy or community-level practice) were slightly more environmentally concerned than those who were focused on micro-practice (e.g., clinical or direct work with clients).

Finances. Family income was evaluated in only two studies and found to be associated with environmental attitudes. In a study of Latinx students, Lopez et al. (2007) found that as parental income increased so did positive attitudes toward the environment. Lang (2011) asked students if they would be willing to pay higher fees to sustain environmentally sustainable services on campus (e.g., organic foods), and among those students willing to pay higher fees, their reported families’ incomes were financially comfortable or wealthy.

Cross cultural comparisons. In three studies, students from more than one country completed a survey on environmental attitudes, and comparisons based on country of origin were made. In all three studies, the American students were less pro-environmental in their attitudes and beliefs. McKercher et al. (2012) found that students from China, Turkey, and Malaysia expressed strong concern for the environment, but students from higher developed economies (e.g., U.S.) had lower levels of concern. Similarly, Cordano et al. (2010) found that Chilean students had higher awareness of environmental problems, greater obligation to protect it, supported limits on property rights, and had stronger intentions to engage in pro-environmental behaviors compared to their U.S. counterparts. Moreover, Chilean students were more altruistic and felt more pressure from peers to engage in pro-environmental behavior.

Jamelske et al. (2013) in a study of beliefs about climate change found that 87% of Chinese students believed that climate change is happening, but only 77% of U.S. students did. Relatedly, Chinese students had a greater belief in the contribution of human activity to climate change (86.4% v. 59.0% U.S.) and a greater belief

in the consensus amongst scientists regarding climate change (72.4% v. 51.8% U.S.). Finally, only 21% of Chinese students said that they were not at all or not very familiar with international policies to address climate compared to 70% of U.S. students. Perhaps these cultural differences are at least in part related to collectivism, which was found in one study of Latinx students to positively influence environmental attitudes and behaviors (Segev, 2015). Similarly, Valdes-Vasquez et al. (2014) found that there was a greater number of students interested in sustainability with a female parent and male parent born outside the U.S. However, Lopez et al. (2007) found that environmental concern was positively associated with the number of grandparents born in the U.S. Cultural influences do not appear to have been studied extensively, but these findings suggest that they may warrant further investigation.

Other Findings

The findings in this section represent a wide range of areas related to the environment; however, they are important to highlight as they may inform future research in this substantive area. A number of variables were found to have an association with pro-environmental attitudes, including concern for animal welfare (Faver, 2013), environmental value (“importance of the environment to the self;” Segev, 2015, p. 195), health concerns (Arnockey et al., 2012), and attitudes toward balancing property rights with environmental concerns (Cordano et al., 2010). In addition, Arnockey et al. (2012) found that pollution health concerns were related to the intention to have children, which was mediated by attitudes toward reproduction.

In a qualitative study of students training to be family therapists, co-systemic connectedness, therapeutic fit, practical considerations and application in treatment, and barriers to eco-informed therapy were related to students’ willingness to incorporate eco-informed language into their practice (Blumer, Hertlein, & Fife, 2012). Relatedly, Miller and Hayward (2014) found that 72% of the social work students in their study thought that the environment is an important aspect of social justice.

Discussion

Results of this review revealed that students rated environmental issues high to very high and

expressed moderate to high concern for the environment. Similarly, environmental attitudes were moderate to moderately high. All of these findings are promising, yet they also suggest that more work is needed. Many of the studies that were part of this review utilized the NEP, which is likely one of the most extensively utilized environmental attitude scales and has been used across disciplines. In their seminal work on the NEP, Dunlap and Liere (1978) sought to examine shifts in worldviews caused by the global environmental justice movement; however, alternative measurement strategies may be necessary for assessing college students’ attitudes with more explicit item content. For example, items on the NEP such as, “Humans have the right to modify the natural environment to suit their needs” and “Despite our special abilities humans are still subject to the laws of nature” seek to uncover a very specific belief system related to how humans interact with nature and what their impact is on the earth. Perhaps asking students to report on their beliefs about specific issues, such as climate change, plastics in the oceans, and consumption of meat, just to name a few, in concert with the NEP or alone, would give educators more insight into knowledge gaps and how to link it to behavior change. This was illustrated in McKercher et al.’s (2012) study where students who had more direct knowledge about climate change also had pro-environmental behaviors that were linked to that knowledge.

Very few studies included specific assessment of climate change; but for those that did, students generally believed that it was occurring or that it was a major issue (range = 75-80%). These findings echo those established in the Pew reports (Anderson, 2017; Feldman et al., 2010). Again, these are promising results, but when they are considered within the context that students do not necessarily believe that human are contributing to climate change (59%) or that scientists agree on this (52%) as was found in Jamelske et al. (2013), there is cause for concern. Relatedly, reported pro-environmental behaviors were moderately high in most studies, with a range of about three to five behaviors on average. How this question is posed is important to the results, and quite a bit of inconsistency was found across studies. A more systematic way to assess pro-environmental behaviors is needed, and researchers should develop and then test a scale so that data can be collected in a comprehensive fashion and compared across studies. Lastly, a positive

association between attitudes and behaviors was found in some studies, which is suggestive that attitudes are informing behavior and in turn behavior likely reinforces attitudes. Moreover, in two studies (Segev, 2015; Wacholz et al., 2014), there was support that more knowledge led to a more positive pro-environmental attitude, which then increased behavior. This is an area that is ripe for educators to capitalize on. That is, when educators can provide new information and help shift attitudes, then they may be more open to behavioral changes. For practitioners, this change in knowledge would be important not only on a personal level, but the professional. That is, past research (Shaw, 2011) indicates that lack of education is a key barrier to environmental practice; thus, if social workers gained new information and training, they would most likely utilize it with their clients.

Results regarding year in school, age, and gender were not consistent, but political ideology was. Year in school and age both demonstrated a positive association with environmental concern in some studies; however, these variables are challenging given that not all students are traditional college-aged, and thus, it is unclear if more education or age in-and-of-itself is a contributing factor to pro-environmental beliefs. Moreover, major may be a mediating variable when assessing how year in school (or age perhaps) may play a role. That is, perhaps students in more "liberal" disciplines show less change (no association) as they progress through school than those in more "conservative" ones. For example, Wacholz et al. (2014) found that students in applied sciences had better environmental attitudes than those in business. Relatedly, political ideology had consistent results; that is, a liberal political ideology was positively associated with environmental concern and pro-environmental behaviors. In terms of gender, men reported higher levels of knowledge about the environment while women generally had greater environmental concern. It is important to note that in studies that included a variable concerning knowledge, it was done so as self-report; thus, we do not really know if men are more knowledgeable about the environment or if they just report that they are. Again, some type of standardized knowledge test would be useful in understanding how best to educate students by identifying specific gaps. Additional research with social workers is needed to truly understand

their level of knowledge and a standardized instrument to use in that assessment would be beneficial. In turn, these knowledge assessments could be used to inform new continuing education opportunities that can specifically address areas that are important for practice. Moreover, expanding social workers' knowledge about the environment would help to create greater stewards of the environment across the micro-macro continuum.

Social Work Student Findings

Three studies with American social work students were identified in our scoping review, but only two specifically examined environmental attitudes (Faver & Muñoz, 2013; Miller & Hayward, 2014). In the third study, Faver (2013) examined beliefs about animal welfare, a related issue. Overall, students had a moderately high to high level of concern for the environment, but education level (i.e., undergraduate or graduate) was not associated with their attitudes or behavior (Faver & Muñoz, 2013; Miller & Hayward, 2014). In Miller and Hayward's (2014) study, a majority of the students (N= 205) surveyed indicated that environmental issues are important for social work (agreed/strongly agreed) and that it is an important facet of social justice. Of concern, and also reflective of the data from social work practitioners, only 21% had some content on environmental issues; however, over half thought it should be part of social work education. In terms of pro-environmental behaviors, macro-oriented students were more engaged, yet environmental advocacy activities were low across the sample (Miller & Hayward, 2014).

Faver and Muñoz (2013) surveyed students at the University Texas-Pan American (N= 105) and found that students felt moderately informed on the environment and held moderately high levels of concern for the environment. Age, gender, and year in school were not significant predictors. A number of pro-environmental behaviors were reported as high, such as turning off lights (95%) and water (87%) and recycling (61%). Based on this same data, but reported in a separate paper, Faver (2013) found that certain aspects of environmental concern were positively associated with animal welfare.

In a new study by Chonody et al. (in press), additional factors were investigated to broaden the scope of understanding about social work

students' (N = 724) attitudes toward the environment. Explaining 51.5% of the variance in environmental concern, six variables were significant: a liberal political ideology, low religiosity, greater personal concern for environmental issues, pro-environmental behaviors, confidence in scientists' understanding of climate change, and age. In a separate analysis with these same data, Chonody and Sultzman (in review) investigated social work students' understanding of environmental justice and their commitment to it. On average, students had mild to moderate support for the incorporation of environmental issues into practice, and greater support was associated with belief in climate change and completion of a university course that included environmental injustice. An open-ended question asked students to define "environmental justice," and results of a content analysis suggested that students primarily defined this term as environmental harm for the benefit of humans (29%). Only 15% of the responses included some mention of the disproportionate exposure to environmental hazards among people who have been historically oppressed and marginalized.

Assessing the results across these five studies clearly indicates that pedagogical efforts are needed to develop students' knowledge of environmental issues as well as how these issues are impacting people. Environmental injustice should be taught as an aspect of racism given that communities of color are often targeted for operations that are harmful for both the people and land, such as corporate pig farming. Social work students and practitioners need a greater understanding of how disparities are exploited and how this injustice is part of practice across the micro-macro continuum.

Limitations

The findings of this scoping review should be considered within the context of its potential limitations. While a scoping review is an efficacious approach to synthesizing current research evidence, searching parameters may not have fully identified the entirety of the literature base. The keywords used could have excluded studies due to variant words used as identifiers. Additionally, some journals could have been inadvertently excluded from the search engines;

thus, the results may have missed some key literature on this topic. Another limitation is that this study examined data over a ten-year time period, but data on the NEP has been collected for over four decades. While the aim of the current study was not to track trends in students' attitudes, future research may want to examine changes over time, which could be informative on how social shifts in knowledge and attitudes may be shaping students' beliefs and practices.

Conclusion

Understanding how to educate citizens about the environment, motivate greener behavior, and support sustainability are important societal goals. Increasing the level of environmental education is an important factor in promoting pro-social attitudes and behaviors (Fischer & McAdams, 2015). Additionally, to facilitate civic engagement and education about environmental justice issues, it is important to focus on critical social justice issues that affect both urban and rural populations as well as many underserved groups. More citizens must become knowledgeable and fight for the development, implementation, and enforcement of laws, regulations, and policies from local to global levels that address the dumping of toxic chemicals; safe and accessible food options; air, noise and water pollution; and safe housing. Directly targeting college students for environmental education has the potential to provide them with the knowledge and skills to develop sustainable behaviors; and for social work, this is a much needed area of development in order to serve our clients.

Stakeholders at colleges and universities can be influential in promoting both the curriculum and campus policies to promote sustainability. Faculty, administrators, staff, students, and parents can be important advocates for curricular changes, particularly in promoting a course that focuses on environmental injustice. Concern for environmental issues is expanding in the profession, and social work educators need to take action to call for the inclusion of environmental justice content in the curriculum (Chonody et al., in press) and help develop CEUs for those who are already practicing. Licensing boards need to make environmental education more salient by requiring evidence of continuing

education on this topic. Social workers cannot adequately serve clients or be advocates for social change without the necessary knowledge and skills.

Strength at the top is essential to change within the profession, and education is the key. Previous research found that perceived authorization and “buy-in” by college and university authorities was an important factor in students’ adoption of recycling and conservation (Watson et al., 2017). Many college campuses regularly promote education and programming in an effort to confront the challenges of climate change, water and energy consumption, use of toxic chemicals, and natural resource depletion. Social work faculty should be part of this charge and help lead the way on advocacy for environmental injustices. They can be integral in organizing campus constituents to press for greener energy supplies on campus, use of organic pesticides and fertilizers, organic food options on campus, and promoting diversion from landfills, such as recycling. Students and other stakeholders with experiences and exposure to environmental justice can provide important narratives which can aid in creating policy change and educating students through the implicit and explicit curriculum about these issues. Similar initiatives should be developed for practitioners in the field so they can also learn and grow. Offering free continuing education on this topic is a good first step in increasing awareness of this issue and educating the vast number of social work practitioners in the US, which is now over 700,000. Once their awareness is piqued, some may go on to do additional trainings, become involved in the movement, and educate others on why protection of the environment is so important. The global pandemic has had important implications for reducing pollution and greenhouse gas emissions, as many societies have embraced technology and telecommuting to stop the spread of the disease. As social work globally embraces interprofessional education, there is the potential that the social work profession will have a greater understanding of the relevance of climate change and sustainability on the international stage as well as in local communities.

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Table 1

| Author | Demographics (N =); Aims | Design; Scale (α); Analyses | Findings |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Arnockey et al. (2012) | N = 139; 90 females, 49 males; $M_{\text{NEP}} = 20.3$ ($SD = 3.59$) 83.4% White Canada To investigate the relationship between environmental concern & fertility | Survey; 15-item New Ecological Paradigm (NEP; 5-point Likert; 81) SEM-path model | -- $M_{\text{NEP}} = 3.63$ (0.52) --Pollution health concerns related to intention to have kids as did NEP scores; mediated by attitudes toward reproduction |
| Blumer et al. (2012) | N = 25; 21 females; 4 No information on age or race/ethnicity 11 = counseling students; 14 = other graduate students Southwest U.S. (metropolitan university) Marriage/couple & family therapist students To understand M/CFT trainees' views of the use of eco-informed language in therapeutic practice | Qualitative; classroom discussion after reading an article & posting to a discussion board; questions: How is going green helpful for families & individuals? Harmful? What is the role M/CFT? How can I assist? What are the pros? Cons? Open & thematic analysis | <i>Themes:</i> ecosystemic connectedness, therapeutic fit, practical considerations & application in treatment, barriers to eco-informed therapy |
| Chesnes & Joeckel (2013) | N = 4,296 $n = 1,907$ (faculty) 37.7% female, 62.3% male; $n = 2,389$ (students) 72.2% female, 27.8% male No information on age Faculty: 94.3% White; Students: 86.8% White Variety of academic disciplines 105 member institutions of the Council for Christian Colleges & Universities (U.S.) | Survey; 7 questions on environmental attitudes & behaviors Correlational (Pearson) | --95-97% believed that it is important for Christians to care about the environment --Theology students were found to be least likely to recycle, to do what is "right" for the environment, & be willing to sacrifice to protect the environment |
| | To investigate the association between Christian theology & environmental concern & the factors related to these differences | | |
| Cordano et al. (2010) | N = 542 $n = 301$ (Chile) 69 females, 241 males; $n = 256$ (U.S.) 101 females, 155 males M_{NEP} Chile = 26.9; U.S. = 26.3 No information on race/ethnicity Commerce students; Chile: Universidad de Concepcion, Universidad de Santiago U.S.: Central Michigan State University, University of Maine, Wright State University Business students To test instruments; compare results cross-culturally for pro-environmental beliefs & behaviors | Survey; 9-item version of NEP (7-point Likert; Chilean = .71, U.S. = .83) & Schwartz's list of values (altruism, openness to change, self-interest, traditional) Bivariate & descriptive analysis | -- $M_{\text{NEP}} = 5.21$ (Chile); 4.86 (U.S.) --Chilean students were more altruistic & felt more pressure from peers to engage in pro-environmental behavior --Chilean students had higher awareness of environmental problems, greater obligation to protect it, limit property rights, & stronger intention to engage in pro-environmental behaviors |
| Ermolaeva (2010) | N = 378 No information on age or race/ethnicity Variety of academic disciplines Colorado State University (U.S.) To explore the gap between environmental concern & action | Survey; 57 closed & open-ended questions related to green culture Descriptive statistics; factor analysis (for scale development) | --The environment ranked highly when asked to rate it amongst other problems (e.g., economic crisis, poor health care, unemployment) --95.3% indicated that the quality of the environment was important to them --Reported performing 5 of the 9 pro-environmental behaviors listed (less than 3% didn't conduct any) |

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|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | <p>--A variety of threats to the environment were acknowledged (e.g., destruction of wildness & forests; air pollution; consumption)</p> <p>--Environmental situation more serious in world (90.2%) & U.S. (88.1%) than the state (57.2%) & city (45.1%)</p> |
| Faver (2013) | <p>$N = 105$; 85.3% female</p> <p>$M_{age} = 30.79$ ($SD = 10.0$)</p> <p>No specific information on race/ethnicity (author reports that sample was primarily Latina(o))</p> <p>Social work students</p> <p>University of Texas-PAN American (U.S.)</p> <p>To investigate the association between environmental beliefs & animal welfare</p> | <p>Survey; 6 items from the NEP (5-point Likert; .56); NEP items treated as independent variables</p> <p>Descriptive statistics; bivariate statistics</p> | <p>-- M_{NEP} for individual items ranged from 3.12-4.59</p> <p>--95.2% endorsed the belief that "humans are severely abusing the environment"</p> <p>--High level of concern for animal welfare (76.9% concerned or very concerned)</p> |
| Faver & Muñoz (2013) | <p>$N = 105$; 85.3% female</p> <p>$M_{age} = 30.79$ ($SD = 10.0$)</p> <p>No specific information on race/ethnicity (author reports that sample was primarily Latina(o))</p> <p>Social work students</p> <p>University of Texas-PAN American (U.S.)</p> <p>To understand the levels of information, attention, behavior, & concern regarding the environment</p> | <p>Survey; author-created items: how well informed are you about the environment; how much attention do you pay to the environment; how concerned are you about environmental issues (4-point Likert for these items); 5 items for pro-environmental behavior</p> | <p>--85% were moderately or very concerned about the environment ($M = 3.07$)</p> <p>--Range of positive responses to 5 pro-environmental behaviors (27-95%)</p> <p>--Level of environmental concern predicted only one pro-environmental behavior (i.e., making yard friendly for small wildlife)</p> <p>--Extent to which they felt informed about the environment was moderate ($M = 2.69$)</p> <p>--The amount of attention paid to the environment was moderate ($M = 2.82$)</p> |
| | | <p>Descriptive statistics; bivariate statistics</p> | |
| Fisher & McAdams (2015) | <p>$N = 552$</p> <p>No information on gender, age, or race/ethnicity</p> <p>Variety of academic disciplines</p> <p>College of Charleston (NC, U.S.)</p> <p>To examine how the amount & type of courses on the environment affect students' conceptualization of sustainability</p> | <p>Survey; author-created items: how important are the following to your definition of sustainability? (13 factors; e.g., reusing waste to create new goods, energy efficiency, democratic participation, social equity & justice); 4 indices were created from the above factors (range = .69 - .81)</p> <p>Linear regression (4)</p> | <p>--Students' understanding of sustainability focused on environmental factors</p> <p>--Type of course was significant in how sustainability was defined, but the number of courses had no impact; exposure to specific content vs. the amount of exposure is more relevant</p> |
| Jamelske et al. (2013) | <p>$N = 1602$</p> <p>$n = 776$ (China); $n = 826$ (U.S.); gender was reported as ~60% female in both samples</p> <p>M_{age} China = 20.1; U.S. = 23</p> <p>China: 4 different universities</p> <p>U.S.: Arkansas, California, New York, Wisconsin</p> <p>Variety of academic disciplines</p> <p>To compare Chinese & American students' views on climate change</p> | <p>Survey; adopted form Yale Project on climate change & George Mason University Center on climate change communication</p> <p>Chi-square</p> | <p>--76.8% of U.S. students & 87.2% of Chinese students believe that climate change is happening</p> <p>--70% of U.S. students said that they were not at all or not very familiar with international policies to address climate compared to 21% of Chinese students</p> <p>--Chinese students have a greater belief in the contribution of human activity to climate change (86.4% v. 59.0% U.S.) & consensus amongst scientists (72.4% v. 51.8% U.S.)</p> |

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|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Kuo & Jackson (2014)</p> | <p>$N_{pretest}$ = 363; 64 females, 299 males $N_{posttest}$ = 313; 56 females, 257 males No information on age or race/ethnicity Undergraduate engineering students New Jersey Institute of Technology (U.S.)</p> <p>To examine the impact of an environmental studies course on attitudes toward the environment</p> | <p>Pre/Posttest survey; 15-items NEP (5-point Likert; alpha not reported)</p> <p>ANOVA</p> | <p>-- M_{NEP} pretest: 48.6-53.9; M_{NEP} posttest: 51.8-57.2 (across 9 courses) --Student attitudes had significant positive changes from pretest to posttest; in particular their attitudes related to the ecological crisis, resource limitations, & fragility of the balance of nature. No change in their understanding regarding human dominance over the environment or their belief in human inventiveness as a means to overcome environmental challenges --No gender differences were found in pretest/posttest results --Engineering students were less supportive of the environment when compared to other majors</p> |
| <p>Lang (2011)</p> | <p>N = 1,225; 65.3% females No information on age or race/ethnicity Variety of academic disciplines Bloomsburg University (PA, U.S.)</p> <p>To examine if there are differences between undergraduate major & students' environmental attitudes & behaviors</p> | <p>Survey; 13-item NEP (4-point Likert; .74); author-created scales for recycling & willingness to pay higher fees for campus environmental initiatives</p> <p>Regression</p> | <p>-- M_{NEP} 35.3 (range: 14-50) --Incoming freshman majoring business were less likely to have pro-environmental attitudes & more likely to report being conservative</p> |
| <p>Lee (2008)</p> | <p>N = 292; 51% female M_{pre} = 22.499 (SD = 6.79) 100% African American Variety of academic disciplines</p> | <p>Survey; 15-item NEP (5-point Likert; alpha not provided)</p> | <p>-- M_{NEP} 50.31 (range: 15-75) --Higher mean scores were found on the following: when humans interfere with nature, it usually leads to disastrous consequence;</p> |
| <p></p> | <p>Houston (U.S.)</p> <p>To examine the environmental behaviors & attitudes of an understudied population, African American college students</p> | <p>Descriptive statistics; Correlations (Pearson); cross tabulations</p> | <p>plants & animals have the same rights as humans to exist; humans severely abuse the environment</p> |
| <p>Lertprachya et al. (2017)</p> | <p>N = 5,425; 60% female M_{pre} = 22 No information on race/ethnicity Variety of academic disciplines Michigan State University (U.S.)</p> <p>To assess the role of a university with & visible sustainability initiatives in changing student attitudes & behaviors about sustainability</p> | <p>Survey; pro-environmental behaviors (i.e., support for political candidates who say they will strengthen the environment, recycling, choosing foods to help the environment, transportation to lower environmental impact)</p> <p>One-way ANOVA</p> | <p>--Exposure to sustainability communication & attitudes were significant for supporting candidates with pro-environmental policies --Students who had been in college longer reported more pro-social attitudes about the environment</p> |
| <p>Levine & Strube (2012)</p> | <p>N = 90; 56 females, 34 males No information on age or race/ethnicity Variety of academic disciplines University of Washington (U.S.)</p> <p>To examine relationships between attitudes & knowledge about the environment & how they predict behaviors</p> | <p>National Environmental Education and Training Foundation (NEETF) /Roper Survey (Cordano Welcomer, & Scherer, 2003; .83) (5-point Likert); 15-item NEP (5 point Likert; .83); measure of environmentally responsible behavior (.87)</p> <p>Path Analysis</p> | <p>-- M_{NEP} for individual items 3.51 (range = 1.40-4.73; SD = .70) --No significant difference between explicit attitudes for women & men, but men were more knowledgeable about the environment as were participants who were older --Mean number of environmental behaviors = 3.35; range is 1.18-4.82.</p> |

A Scoping Review of College Student Attitudes' Toward the Environment

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| Lopez et al. (2007) | <p>$N = 636$; 69% female $M_{NEP} = 25.21$ ($SD = 7.90$) 100% Latina(o) Variety of academic disciplines Texas (U.S.)</p> <p>To examine the environmental attitudes amongst Latina(o) students</p> | <p>Survey; 15-item NEP (5-point Likert; .69)</p> <p>OLS regression</p> | <p>-- M_{NEP} not provided --Women had higher levels of environmental concern --As parental income increased so did positive attitudes toward the environment</p> |
| McKercher et al. (2012) | <p>$N = 2,669$; 72.7% female Age: 64.9% < 22; 24.6% = 23-25; 10.5% > 25 Sample was a subset of students from 22 economies which included American students Tourism & hospitality students</p> <p>To examine attitudes toward tourism's relationship with the environment & climate change</p> | <p>Survey; closed & open-ended items, including: attitudes toward environmental concern, causes of climate change, behavioral changes in last 3 years to lessen environmental impact</p> <p>Chi-square; content analysis</p> | <p>--Attitudes toward the environment varied based on the country of origin of student, but overall, 60% were concerned about the environment a lot to greatly concerned & 40% were not concerned at all --Students from China, Turkey, & Malaysia expressed strong concern vs. students from higher developed economies (e.g., U.S.) --80% viewed climate change as a major issue; 70% had modified their behavior over the past 3 years but most changes were non-specific or superficial (e.g., "saving water") --Only 1/3 could identify direct & specific causes of climate change</p> |
| Miller & Hayward (2014) | <p>$N = 205$; 85% female $M_{NEP} = 29$ ($SD = 9.79$) 14% African American; 71% White Social work students Northwest & Southeast U.S.</p> | <p>Survey; 15-item NEP (5-point Likert; .83)</p> <p>Descriptive statistics; bivariate statistics; two-way ANOVAs</p> | <p>--$M_{NEP} = 53.8$ (range: 21-70) --Environmental actions ($M = 5.6$; range: 1-17) --Higher NEP scores were associated with more pro-environmental actions --80% agreed/strongly agreed that environmental issues were important for social work</p> |
| | <p>To explore attitudes, interests in, & practices related to the environment</p> | | <p>--72% thought that the environment is an important aspect of social justice</p> |
| Ruff & Olson (2009) | <p>$N = 95$; "primarily" female Age: 18-25 No information given on race/ethnicity Interior design students Southern U.S.</p> <p>To examine environmental concern & use of sustainable design practice</p> | <p>Survey; 25 item NEP (5-point Likert; .82); 3 open-ended questions</p> <p>Descriptive statistics</p> | <p>--$M_{NEP} =$ not given (range: 3.25-4.01 for the ecology subscale; range for sustainability subscale: 2.32-3.34)</p> <p>--76.5% reported recycling, buy other types of sustainability behaviors were also noted (e.g., energy conservation, composting, alternative uses of transportation, water conservation, energy efficient lighting, use of natural light [the authors do not quantify these responses]) --Overall, students were moderately pro-environmental & pro-sustainability, but examination of individual items suggests that some students were not pro-environmental & were not knowledgeable about sustainability</p> |
| Schneiderman & Freihoefer (2012) | <p>$N = 24$ No information given on gender, age, or race/ethnicity Interior design students Western U.S.</p> <p>To test the impact of including ecological design content on students attitudes toward the environment</p> | <p>Survey; 15-item NEP (5 point Likert; pretest = .81; posttest = .75)</p> <p>t-tests</p> | <p>--NEP categorized as human jurisdictions, nature's ability and rights, and earth's capabilities. -- Human jurisdiction pretest: 3.5 ($SD = 2.24$), posttest: 3.72 ($SD = 3.17$); Nature's ability and rights pretest: 4.05 ($SD = 0.20$), posttest: 3.99; Earth's vulnerability pretest: 3.88 ($SD = 0.04$), posttest 3.92 --Students' awareness of human jurisdiction regarding human ability to create sustainable technologies for interior design improved after</p> |

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| | | | the implementation of an educational program ("Okala modules") |
| Schultz et al. (2011) | <p><i>N</i> = 169 Age: 19-24 No information given on gender or race/ethnicity Variety of academic disciplines Midwest U.S.</p> <p>To examine attitudes toward the environment among students enrolled in environmental studies course and recreation management</p> | <p>Survey; Environmental Action & Philosophy Matrix (EAPM) Quiz (Simpson & Cain, 1997), 12 item multiple-choice quiz followed by short lecture</p> <p><i>t</i>-tests; ANOVA</p> | <p>--EAPM Egocentric: recreational students (<i>M</i> = 18.36), environmental students (<i>M</i> = 16.05); Ecocentric: recreational students (<i>M</i> = 16.73), environmental students (<i>M</i> = 19.61)</p> <p>--Students enrolled in recreational courses were significantly more egocentric and less ecocentric than students enrolled in environmental studies courses</p> |
| Segev (2015) | <p><i>N</i> = 410; 57% female <i>M_{age}</i>: 23.6 (<i>SD</i> = 4.37) 100% Hispanic (61% U.S. born, 39% foreign born) Variety of academic disciplines Southeast U.S.</p> <p>To examine how the cultural value of collectivism influences conservation behaviors among American Hispanic college students</p> | <p>Survey; author-created scale utilizing previously validated scales (e.g., collectivism, environmental value, environmental concern, concrete environmental knowledge; 5-point Likert; α's > .68)</p> <p>Structural equation modeling</p> | <p>--Collectivism <i>M</i> = 4.12 (<i>SD</i> = 2.16); Environmental value <i>M</i> = 3.32 (<i>SD</i> = 3.26); Environmental concern <i>M</i> = 3.73 (<i>SD</i> = 4.03); Perceived consumer effectiveness <i>M</i> = 3.57 (<i>SD</i> = 3.42); Concrete knowledge <i>M</i> = 3.09 (<i>SD</i> = 4.62); Recycling <i>M</i> = 3.28 (<i>SD</i> = 3.54); Water conservation <i>M</i> = 3.57 (<i>SD</i> = 3.84); Electricity-efficient appliances <i>M</i> = 3.3 (<i>SD</i> = 3.13); Electricity saving behaviors <i>M</i> = 3.63 (<i>SD</i> = 2.77); Energy conservation <i>M</i> = 2.16 (<i>SD</i> = 3.51)</p> <p>--Collectivism significantly influenced environmental attitudes & behaviors</p> <p>--Perceived consumer effectiveness & concrete knowledge had a significant effect on recycling, water conservation, use of electricity-efficient appliances, & routine behaviors to conserve electricity</p> <p>--Environmental value & environmental concern were positively associated</p> <p>--Age & environmental value were positively associated.</p> |
| | | | <p>--6.9% (<i>n</i> = 464) fell into the top quartile for sustainability behavior & attitude scores</p> <p>--MIS students were more likely to be female, racially diverse, and in careers wanted to focus on poverty, issues related to sustainability, specifically climate change & environmental degradation</p> |
| Valdes-Vasquez et al. (2014) | <p><i>N</i> = 6,772 No information provided on gender, age, or race/ethnicity Variety of academic disciplines Northeast, South, Midwest, West Coast U.S.</p> <p>To examine similarities & differences between the pro-sustainability attitudes & behaviors of college students most interested in sustainability (MIS) & students less interested</p> | <p>Survey; author-created sustainability scale (47 item, 5-point Likert)</p> <p>Descriptive statistics; Kruskal-Wallis test; regression (not reported)</p> | <p>--75% of the sample believed that climate change is occurring & due to human impact; 2/3 of sample were very concerned about climate change</p> <p>--Concern about the environment was not reflected by changes in behavior; only 15% reported making behavior changes</p> <p>--Applied science majors (e.g., nursing, social work) expressed more concern about the environment than business majors</p> <p>--Those who indicated more knowledge about the cause of climate change were more worried than participants with less knowledge</p> |
| Wacholz et al. (2014) | <p><i>N</i> = 338; 51% female 2/3 of sample between 18-22 No information provided on race/ethnicity Variety of academic disciplines New England (U.S.)</p> <p>To examine the knowledge & attitudes of students regarding climate change, their personal intention to change it, & their perceptions of what is needed educationally to enhance their learning related to it</p> | <p>Survey; 21 author-created items (unspecified Likert); open-ended questions regarding what the institution could do to improve education related to climate change</p> <p>Univariate & bivariate statistics; content analysis</p> | <p>--75% of the sample believed that climate change is occurring & due to human impact; 2/3 of sample were very concerned about climate change</p> <p>--Concern about the environment was not reflected by changes in behavior; only 15% reported making behavior changes</p> <p>--Applied science majors (e.g., nursing, social work) expressed more concern about the environment than business majors</p> <p>--Those who indicated more knowledge about the cause of climate change were more worried than participants with less knowledge</p> |

A Scoping Review of College Student Attitudes' Toward the Environment

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| <p>Watson et al. (2017)</p> | <p>N= 315; 54% female No information provided on age 3% African American, 8% Asian/Pacific Islander, 62% Caucasian, 3% Hispanic, 3% multi-racial Variety of academic disciplines Southeastern U.S. (private university)</p> <p>To examine how support from administration, peers, and the context in which college students live influence behaviors toward the environment among fourth year college students</p> | <p>Survey; Environmental Attitudes (items from a variety of scales, .86), Environmental Identity scale (Clayton, 2003; .89) & author-created scales (7-point Likert): Recycling scale (.90); Conservation scale (.81); Institutional Support for Recycling (.88); Institutional Support for Conservation (.92); Peer support for Recycling (.92); Peer Support for Conservation (.93)</p> <p>Seeming unrelated regression</p> | <p>--Perceived authorization by the university of environmentally responsible behaviors had a significant positive association with students reported frequency of recycling & conservation behaviors --Perceived peer endorsement had a significant positive association with reported conservation behaviors --Living on campus had a positive association with perceived endorsement of recycling --Perceived endorsement of conservation positively affected conservation behaviors --Pro-environmental attitudes & an environmental attitude had a significant positive influence on recycling & conservation</p> |
| <p>Webb & Hayhoe (2017)</p> | <p>N= 88; 63 females, 24 males Age: 18-22 "Predominately Caucasian" Variety of academic disciplines Rural & Western New York U.S.</p> <p>To examine climate change beliefs of students at an Evangelical Christian college before & after an educational presentation on climate change</p> | <p>Pre/Posttest; Participants were assigned to one of these educational conditions: live, pre-recorded, pre-recorded with climate change information; modified scale from Six Americans of Global Warming Screening Tools</p> | <p>--A significant increase in climate change beliefs after hearing an educational presentation was found, but modality did not matter</p> |
| | | <p>(Leiserowitz, Maibach, Roser-Renouf, Feimberg, & Howe 2013; alpha not provided)</p> <p>Wilcoxon signed-rank test; Kruskal-Wallis test</p> | |

