Faculty Epistemological Beliefs as a Mediator to Attitudes Toward Persons with Disabilities

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Abstract

Previous research has indicated that university faculty members' attitudes towards students with disabilities varies depending on specific background qualities of those faculty, including gender, type of field (soft or hard science), and type of study (pure or applied). We examined epistemological beliefs as a possible mediator between faculty background qualities and attitudes towards individuals with disabilities. 223 faculty members at a large, public research intensive university in the Southwestern, United States, were surveyed to evaluate their attitudes and epistemological beliefs as well as to collect background information. Structural equation modeling was utilized to compare two competing models, one with background directly impacting attitudes and a second with epistemological beliefs acting as a mediator of this relationship. The mediating model provided a significant improvement over the fit of the first model, which supported the mediating role of epistemological beliefs in predicting faculty members' attitudes towards students with disabilities.

The number of college students with disabilities has tripled over the past twenty-five years as an estimated nine percent of all entering college freshman report having a disability (Olney, Kennedy, Brockelman, & Newsom, 2004; Palombi, 2000). Since the Rehabilitation Act of 1973, this population of students continues to increase in step with legislative mandates such as the Americans with Disabilities Act (ADA) and the Individuals with Disabilities Education Act (IDEA) requiring inclusive primary and secondary education for students with disabilities (HEATH Resource Center, 1999). While this population of students continues to increase in its enrollment in institutions of higher education, faculty member, disability service providers, and administrators in higher education must have an orientation to serve this special population of students beyond those tangible accommodations such as cement curb cuts and accessible building entrances but in fostering an attitudinal environment of trust and respect where these students can achieve their academic potential (Aune, 2000).

Upon entering institutions of higher education, college students with disabilities encounter a unique set of issues and concerns that their able-bodied peers do not confront. Among these issues and concerns are faculty attitudes towards them and their disabilities. The attitudes and beliefs of educators in particular have been indicated as being associated with their future behavior towards students. In the K-12 educational setting, teacher beliefs have been associated with both the quality and delivery of instruction (Pajares, 1992). In the postsecondary

educational setting, faculty beliefs and attitudes are not studied with the same frequency. Research regarding teaching in higher education has indicated that institutional approaches to promotion and tenure can influence the attitudes and beliefs of faculty members towards teaching (Fairweather, 2002). While some institutions of higher education have suggested that teaching as service should be more highly valued in the promotion and tenure decision process to improve faculty attitudes and beliefs towards teaching, some state legislatures have suggested the elimination of tenure to ensure long-term teaching effectiveness (Fairweather, 2002). In his study of faculty members obtained from the National Study of Postsecondary Faculty, Fairweather (2002) concluded that faculty attitudes and beliefs towards teaching are associated with teaching productivity (measured in terms of contact hours with students), especially in relation to institutional agendas.

With regard to attitudes and beliefs towards students with disabilities, Greenbaum, Graham, and Scales (1995) have indicated that faculty members seem to be uninformed about college students with disabilities and lack understanding about the nature of disability. College students with disabilities have echoed this finding reporting being generally dissatisfied with the level of knowledge and awareness that faculty members and administrators have regarding the issues and concerns of students with disabilities (Wilson, Getzel, & Brown, 2000). Students with disabilities have highlighted these issues and concerns especially in regards to the classroom accommodations process reporting added stress, anxiety, and poorer academic performance as outcomes (Kruse, Elacqua, & Rapaport, 1998). In reviewing the literature regarding faculty attitudes towards this special population of students, Rao (2004) concluded that amongst faculty that there is a, "need to be better informed about disabilities and students with disabilities" (p. 197).

Faculty members are not all alike in their understanding and attitudes towards this special population. Faculty members from certain academic fields such as education and the liberal arts reflected more positive attitudes towards students with disabilities than faculty members in engineering and business (Schoen, Uysal, & McDonald, 1987). More recently, Leyser, Vogel, Brulle, and Wyland (1998) considered academic field or discipline a significant factor in predicting the level of contact and knowledge that instructors had in regards to students with disabilities. In surveying 420 faculty members, Leyser et al. (1998) examined variables such as instructor gender and academic discipline as influencing the willingness of faculty to accommodate college students with disabilities. Nelson, Dodd, and Smith (1990) directly assessed the willingness of faculty to accommodate students with learning disabilities in relation to academic field. In a survey of 107 faculty members, Nelson et al. (1990) found that College of Education faculty members reported being the most willing to accommodate students with disabilities followed by those faculty members in the arts and sciences, then those faculty members in business. Fonosch and Schwab (1981) noted similar findings that Education faculty reported more positive attitudes towards students with disabilities than instructors in engineering and the natural sciences. Academic discipline appears to be related to the willingness of faculty members to accommodate college students with disabilities.

Studies regarding the relationship between instructor gender and faculty attitudes towards students with disabilities appear to have mixed findings. Several studies have found that female instructors to have more positive attitudes towards students with disabilities (Fonosch & Schwab, 1981; Leyser et al. 1998; Askamit, Morris, & Leunberger, 1987) while other studies have indicated no differences in faculty attitudes towards students with disabilities by instructor gender (Schoen et al., 1987; Nelson et al., 1990).

Differences in faculty attitudes towards students with disabilities have been found to be influenced by the information-seeking behaviors of faculty members (Leyser et al., 1998). Faculty who exhibit more information-seeking behaviors such as requesting additional training for teaching students with disabilities, appear to have more positive attitudes towards students with disabilities compared to faculty who exhibit less information-seeking behaviors in regard to pedagogical and awareness training (Leyser et al., 1998). As such, higher frequencies of information-seeking behaviors have been associated with more sophisticated or less naïve epistemological beliefs (Whitmire, 2003). In a qualitative study interviewing undergraduate students, Whitmire (2003) discerned that undergraduate students with medium to high sophistication in epistemological beliefs more often tended to pursue the exploration of topics for personal understanding and exhibit other information-seeking behaviors than students with medium to low sophistication in epistemological beliefs. Thus, the information-seeking behaviors of faculty to acquire additional training in regards to students with disabilities may be similarly associated with the epistemological beliefs faculty members hold on learning process and knowledge development. It can be postulated that faculty members who believe learning occurs in a rapid and single-trial process would be less flexible when accommodating special needs of students with disabilities than those who believe learning is a gradually progressive process. Conversely, faculty members who believe people's competence or intelligence are fixed entities may be less patient when teaching students with disabilities than those who believe students' competence and intelligence are amendable and can be improved with effort. The purpose of this study was to examine whether the epistemological beliefs of faculty members can be considered a mediating variable in their attitudes towards students with disabilities as a function of faculty's gender, discipline, and level of contact that have been found to be related to faculty attitudes towards persons with disabilities.

Method

Participants

An online survey was sent to a sample of faculty members in a large, public university located in the Southwestern United States over the course of a six-month period. Of these faculty members, 223 volunteered to complete the online survey in its entirety by following a link contained in a recruitment e-mail message. The majority of the participants identified themselves as European American (83.8%, N = 187) with 54.1% (N = 122) reporting as male. A total of 48 different academic departments were represented contained with sixteen colleges and schools at the university studied.

Measures

We employed three measures to assess faculty attitudes towards students with disabilities, level of contact along with attitudes, and their epistemological beliefs. To measure faculty attitudes towards students with disabilities, the researchers administered Form O of the Attitudes towards Persons with Disabilities (ATPD) scale (Yuker & Block, 1986). The ATPD is a unidimensional scale, which assesses how respondents view persons with disabilities as a group. Form O of the ATPD is a 20-item, six point, Thurstone-type scale with no midpoint creating a forced-choice response format. Examples of a positively-scored item and a negatively-scored item to be reversed are provided respectively:

- Disabled people are the same as anyone else.
- Most disabled people feel sorry for themselves.

Higher scores on this instrument indicate more positive attitudes towards persons with disabilities while lower scores indicate less positive attitudes towards persons with disabilities. Form O of the ATPD has been reported as having an internal consistency coefficients ranging from $\alpha = .67$ to $\alpha = .95$ (Yuker & Block, 1986). For this study, the internal consistency of scores for Form O of the ATPD was $\alpha = .85$.

To measure the epistemological beliefs of faculty, we employed the Epistemic Belief Inventory (EBI). The EBI is a 28-item, five point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) (Schraw, Bendixen, & Dunkle, 2002). The researcher summed the score for each individual while omitting any individuals who did not complete the instrument from analysis thus not including any missing values. Examples of a positively-scored item and a negatively-scored item to be reversed are provided respectively:

- Absolute moral truth does not exist.
- Really smart students don't have to work as hard to do well in school.

Higher scores on this instrument indicate more sophisticated epistemological beliefs while lower scores indicate less sophisticated, more naïve epistemological beliefs. The reported internal consistency of scores for this instrument was $\alpha = .83$ (Schraw et al., 2002). For this study, the internal consistency of scores obtained from the EBI was $\alpha = .76$.

For the variable of academic discipline, the different academic departments were categorized as either a hard or soft discipline according to Biglan's classification system (Biglan, 1973a & 1973b). In surveying 168 faculty representing 36 different academic disciplines, Biglan (1973a) asked faculty to classify each academic discipline "on the basis of the similarity of the subject matter," (p. 196) as deemed by the faculty members studied. The categorization of a discipline as hard or soft refers to the degree of paradigmatic development of a field (Biglan, 1973a; 1973b). Disciplines such as chemistry, biology, and mathematics, for example, were categorized as hard while disciplines such as political science, psychology, and fields in the fine arts were categorized as soft. In this study, the distribution of hard versus soft disciplines was 97 faculty members and their respective departments classified as hard and 126 faculty members and their respective departments classified as soft. The distribution of pure versus applied disciplines was 94 faculty members and their respective departments classified as pure and 129 faculty members and respective departments classified as applied. If a department could not be classified according to Biglan's system, the response was removed from the discipline phase of the analysis, which resulted in five responses being omitted from analysis.

Procedure

As the researchers did not have direct access to the e-mail addresses of faculty members across colleges of the university, participation of faculty members was solicited by requesting individual departmental and college administrators to forward the recruitment e-mail message to their respective listservs of faculty members. The researchers also posted a similar recruitment message that was distributed via a university-wide faculty e-mail listserv system after university administrative approval. After collected, data were recoded and reversed per instrument

instructions. The researchers summed the score for each individual and any missing values were deleted listwise in SPSS (v. 12.0). No modifications were made to any of the instruments.

Analyses

To examine the initial relationship between the faculty characteristics and faculty attitudes towards persons with disabilities, we tested a weighted least square means and variance (WLSMV) structural model using MPLUS (v.4.20) on the model without epistemological beliefs as a mediating variable (Figure 1). The categorical variable of faculty characteristics, gender and discipline, were dummy coded to be included in the analysis with female coded as 1 and male as 2 , soft fields as 1 with hard fields as 2, and applied fields as 1 with pure fields as 2. After examining the relationship of faculty characteristics with faculty attitudes towards persons with disabilities, we then tested the model introducing epistemological beliefs as a mediator. In performing our analyses, five statistics reflecting fit will be reported: the chi-square ($\chi 2$) test statistic; the root mean square error of approximation (RMSEA); the weighted root square residual (WRMR), the Tucker Lewis Index (TLI), also known as the Non Normed Fit Index (NNFI); and the Comparative Fit Index (CFI). No post hoc model modifications were made.

Results

Without Epistemological Beliefs as a Mediator

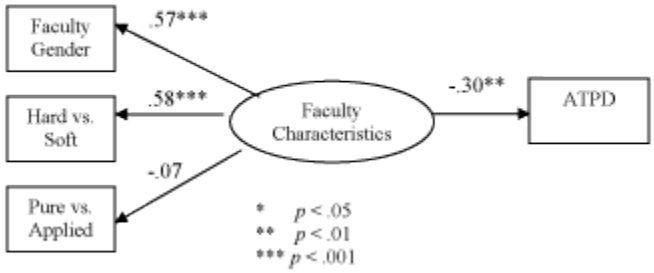
In examining the relationship between faculty characteristics and faculty attitudes towards persons with disabilities, the data appear to fit the model well. The chi-square goodness-of-fit statistic was not significant indicating that the data may fit the model ($\chi 2(5) = 5.888$, $p = .32$). The root mean square error of approximation (RMSEA) as compensating for the effects of model complexity was .028, which according to Browne and Cudek (1993) indicates an acceptable fit of the model being less than or close to 0.05. A WRMR value of .673, which suggests a good fit in models containing both continuous and categorical variables as being less than .90 (Muthen & Muthen, 2001). The value of Tucker Lewis Index (TLI), also known as the Non Normed Fit Index (NNFI) was .951 and the value of the Comparative Fit Index (CFI) was .973. Hu and Bentler (1999) note that fit index values of .95 (or close to it) are indicative of good fit. Thus, the model appears to fit the data well. All but one path, from pure vs. applied variable to ATPD, was significant at the .05 level or less as shown in **Figure 1**.

Faculty Characteristics & Attitudes towards Persons with Disabilities

The strength and nature of the relationship between faculty characteristics and faculty attitudes towards persons with disabilities was moderately negative ($p < .01$) indicating an inverse relationship with the coding used in the analysis. This result suggests that less positive attitudes toward persons with disabilities are more likely associated with male faculty members in hard disciplines than female faculty members in the soft disciplines. This finding supports previous research indicating that faculty members who are males and in hard fields have less positive attitudes towards persons with disabilities.

Figure #1

Figure 1. Path diagram without epistemological beliefs as a mediator



With Epistemological Beliefs as a Mediator

In examining the relationship between faculty characteristics and faculty attitudes towards persons with disabilities with epistemological beliefs as a mediator, the data appear to fit the model well. The chi-square goodness-of-fit statistic was not significant indicating that the data may fit the model ($\chi 2(7) = 7.995$, $p = .33$). The root mean square error of approximation (RMSEA) as compensating for the effects of model complexity was 0.025. A WRMR value of .664, which suggests a good fit being less than .90 (Muthen & Muthen, 2001). The value of Tucker Lewis Index (TLI), also known as the Non Normed Fit Index (NNFI) was .977 and the value of the Comparative Fit Index (CFI) was .988. Thus, the model appears to fit the data well. All but two paths, the path from the manifest variable of pure vs. applied to the latent variable of faculty characteristics and the path from the latent variable of faculty characteristics to ATPD, were significant at the .05 level or less as shown in **Figure 2**.

Faculty Characteristics & Epistemological Beliefs

The nature and strength of the relationship between faculty characteristics and epistemological beliefs indicated a moderately negative relationship ($p < .001$) such that naïve and less sophisticated epistemological beliefs are more likely to associated with male faculty members and those faculty members in hard fields than female faculty members and those faculty members in the soft disciplines, which is consistent with findings regarding differences in epistemological beliefs by academic discipline (e.g. Hofer, 2000; Jehng, Johnson, & Anderson, 1993; Paulsen & Wells, 1998).

Epistemological Beliefs & Attitudes towards Persons with Disabilities

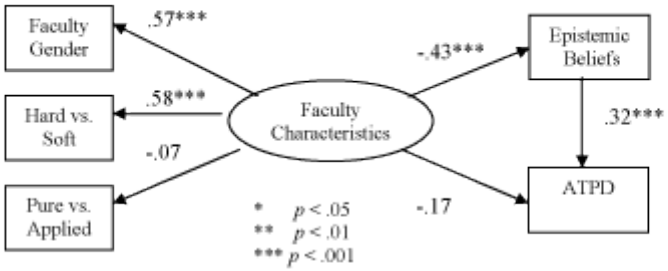
The nature and strength of the relationship between epistemological beliefs and faculty attitudes toward persons with disabilities indicated a moderately positive relationship ($p < .001$) indicating that as the epistemological beliefs of faculty members became more sophisticated that their attitudes towards persons with disabilities were more positive. This finding suggests that epistemological beliefs can be considered a mediator in faculty attitudes towards persons with disabilities as a function of instructor gender and discipline classification (hard vs. soft). Adding epistemological beliefs as a mediating variable in the model, the relationship between faculty characteristics and faculty attitudes towards persons with disabilities became non-significant

indicating the significant relationship between faculty characteristics in the model shown in Figure 1 was primarily accounted for by the relationships between the faculty characteristics and epistemological beliefs and between the epistemological beliefs to their attitudes toward students with disabilities.

Figure #2

epistemological beliefs and between the epistemological beliefs to their attitudes toward students with disabilities.

Figure 2. Path diagram of epistemological beliefs as a mediator



Discussion

The results of this study suggest that the epistemological beliefs of faculty members may be considered a mediating variable among faculty characteristics, defined as the gender and discipline classification of the faculty member, and their attitudes towards persons with disabilities. From these findings, special educators, disability service providers, and administrators in higher education can confront possible misapprehensions regarding students with disabilities associated with less sophisticated epistemological beliefs while specifically targeting those faculty members based upon faculty characteristics. Creating a dialogue between faculty members and students with disabilities must begin with disability service providers and administrators in higher education being aware of the cognitive factors that influence faculty attitudes towards persons with disabilities beyond those faculty characteristics such as instructor gender or classification of academic discipline.

For special educators, disability service providers, and administrators in higher education, the establishment of epistemological beliefs as a mediator to faculty attitudes towards persons with disabilities provides direction to future training and interactions with faculty members in accommodating students with disabilities. For instance, an individual holds less sophisticated (or more naïve) epistemological beliefs in the dimension of Quick Learning believing that individuals cannot acquire knowledge at all unless they can acquire it quickly such as upon the first exposure to material (Schommer, 1990). College students with learning disabilities, attention deficits, and other cognitive impairments may be considered unable to acquire knowledge or learn in the classroom if a faculty member holds such a less sophisticated epistemological belief in quick learning. If a faculty member holds less sophisticated epistemological beliefs in the dimension of Innate Ability (Schommer, 1990), then they would ostensibly believe that ability is primarily static and innate thus students would be considered as either having ability or not. Faculty members with less sophisticated beliefs in this dimension

may view students requesting accommodations as not having the innate ability to learn in the college classroom thus unworthy or unable to succeed in higher education.

Additionally, in holding less sophisticated epistemological beliefs in the dimension of Simple Knowledge (Schommer, 1990), a faculty member may believe that knowledge is simple and clear cut. The unique and diverse nature of disability may be difficult for such faculty members to confront in accommodating students with disabilities, especially those students who have disabilities with an episodic or chronic symptomology whereas accommodations would not be required all the time or in all instances. Faculty members with extremely naïve epistemological beliefs in the dimension of simple knowledge may as a result unintentionally transmit a put-out or shut up message to students with disabilities in requesting accommodations. This put-out or shut up message can be readily seen in the disability accommodations statements in the syllabi of some faculty members, where a faculty member will require that students request accommodations in the first week (or by some other arbitrary deadline) or not be able to receive accommodations at all for the remaining duration of the course. The imposition of an arbitrary deadline implies that requesting accommodations is a simple and straightforward act for college students with disabilities involving no level of complexity with respect to the individuated nature of disability and response to disability.

Limitations

Age or years of experience in higher education would have been relevant variables to include in the model with regard to faculty characteristics in this study. Generally, the attitudes of faculty members towards persons with disabilities become more positive with years of experience in higher education (Leyser et al., 1998) along with their epistemological beliefs becoming more sophisticated (Schommer-Aikins, Duell, & Hutter, 2005; Schommer, 1993). Future research should consider these variables in examining the relationship between faculty attitudes towards persons with disabilities and their epistemological beliefs. Additionally, previous level of contact with persons with disabilities has been indicated as influencing faculty attitudes towards persons with disabilities (Leyser et al., 1998). Previous contact with members of the disabled community has been indicated as being associated with faculty members being more comfortable with college students with disabilities and the accommodations process (Satcher, 1992).

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