UNIVERSITY FACULTY PERCEPTIONS OF STUDENTS WITH LEARNING DISABILITIES: CORRELATES AND GROUP DIFFERENCES

Christopher Murray, Carol T. Wren, and Christopher Keys

Abstract. **This investigation examined faculty attitudes, beliefs, and practices with regard to students with learning disabilities (LD). An instrument was designed to measure attitudes and administered to all faculty in a large urban, private university. Responses from 192 faculty members were subjected to an exploratory factor analysis; results indicated that the instrument contained 12 reliable factors. Further, correlational analyses provided preliminary support for the instrument's construct validity by showing that major constructs were associated with each other in expected directions. Descriptive analyses indicated that faculty generally had positive perceptions about students with LD and were willing to spend time supporting students with LD. Consistent with prior research, faculty expressed greater willingness to provide minor, rather than major, accommodations. Group comparisons by faculty gender, academic unit, and rank are reported. The implications of these findings for future research and training efforts are discussed.**

CHRISTOPHER MURRAY, Ph.D., University of Oregon.
CAROL T. WREN, Ph.D., DePaul University.
CHRISTOPHER KEYS, Ph.D., DePaul University.

Adult students with learning disabilities (LD) represent one of the fastest growing populations of students attending colleges and universities (Mull, Sitlington, & Alper, 2001). Although it is difficult to accurately determine the number of students with LD in postsecondary institutions because these students must self-disclose, recent estimates from the National Longitudinal Transition Study-2 suggest that approximately 10% of youth with LD have enrolled in four-year college or university at some point during the first two years after leaving high school (Wagner, Newman, Cameto, Garza, & Levine, 2005). Nevertheless, students with LD continue to be severely underrepresented in four-year colleges and universities. Although approximately 6-8% of school-age children and youth in public school settings are receiving services for a learning disability (U.S. Department of Education, 2003), recent data suggest that less than one percent (.07) of students within four-year colleges and universities report having a learning disability (Horn & Nevill, 2006). In contrast, approximately two to three times as many students report having orthopedic impairments (2.3%), mental illness/ depression (2.5%), attention deficit disorder (1.4%), or health impairments (1.6%), even though

these disabilities occur less frequently among children and youth in public elementary and secondary schools. Furthermore, estimates of four-year college attendance rates among the general population far outpace attendance rates among students with LD, ranging from between 40 to 60% (Murray, Goldstein, Nourse, & Edgar, 2000; U.S. Department of Health and Human Services, 2003[1]; U.S. Department of Labor, 2007).

A number of factors contribute to attendance rates and the success or failure of students with LD in four-year colleges and universities (Gregg, 2007; Litner, Mann-Feder, & Guerard, 2005). These factors may include individual cognitive and academic skills (Harztzell & Compton, 1984; Murray & Wren, 2003), study habits and motivation (Murray & Wren, 2003), prior educational experiences (Halpern, Yovanoff, Doren, & Benz, 1995; Wagner, Newman, & Cameto, 2004), family support and expectations (Wagner et al., 2005), financial resources (Wagner et al., 2005), and university supports and accommodations (Allsopp, Minskoff, & Bolt, 2005; Finn, 1998; Trammell, 2003). In the current investigation we focus on gaining further understanding about one of these factors – university contexts. We were particularly interested in examining university faculty members' attitudes and perceptions of students with LD within a large private university.

In many ways, college and university faculty are the primary conduits through which students gain access to knowledge in university environments, and faculty are directly responsible for determining how competent students are in their acquisition of that knowledge (Harrison, 2003; Scott & Gregg, 2000). A statement made by M. Walker over 25 years ago remains timely: "Support services can make it possible for the handicapped student to enter the postsecondary setting physically but only faculty can provide access to knowledge and ways of knowing" (1980, p. 54). Thus, university faculty create the context for the delivery of instruction, they develop systems that support knowledge acquisition, and they develop systems that assess student understanding of that knowledge.

As an increasing number of students with LD enter colleges and universities, faculty will face greater demands to increase their understanding of LD, evaluate their attitudes towards students with LD, and develop strategies to work with students with LD in ways that are effective. Developing further understanding about the attitudes and perceptions of faculty is important because this information may be used to develop ecologically oriented, targeted interventions that are designed to build natural supports for students with LD within university contexts.

Research conducted in the 1980s and 1990s was instrumental in bringing attention to the issue of faculty attitudes and perceptions. Findings from those investigations suggested that faculty may have lower academic expectations for students with LD than for students without disabilities (Houck, Asselin, Troutman, & Arrington, 1992; Matthews, Anderson, & Skolnick, 1987; Minner & Prater, 1984), and although college and university faculty are generally willing to provide students with minor accommodations (e.g., tape-recorded lectures or additional time during exams), they are less willing to allow major accommodations such as reductions or alterations of major course assignments (Matthews et al., 1987; Nelson, Dodd, & Smith, 1990; Vogel, Leyser, Wyland, & Brulle, 1999).

Similar findings have been reported by researchers who have studied the perspectives of college and university students with disabilities (Farone, Hall, & Costello, 1998). For example, Farone et al. (1998) interviewed 32 students with disabilities at one university. Responses revealed that students perceived that faculty, staff, and administrators lacked information regarding disability issues, had "poor" attitudes towards students with disabilities, and were not receptive to accommodation requests.

Also interested in student perceptions, Hartman-Hall and Haaga (2002) studied student reactions to hypothetical scenarios in which faculty reacted positively or negatively to a request for an accommodation. The researchers found that negative reactions from faculty negatively affected students' decisions to seek further assistance, whereas positive reactions from faculty led to greater willingness to seek future assistance. Similar comparisons for hypothetical reactions from peers were not significantly associated with students' willingness to seek additional support, suggesting that faculty play a particularly crucial role in influencing students' decision to seek additional support for their learning disability (Hartman-Hall & Haaga, 2002).

In interpreting these findings, several issues must be taken into account. First, it is important to consider the legal protections extended to students with disabilities in postsecondary settings and the potential impact of such legislation on faculty perceptions. According to Section 504 of the Rehabilitation Act of 1973, Subpart E:

> A recipient [postsecondary institution] to which this subpart applies shall make such modifications to its academic requirements as are necessary to ensure that such requirements do not discriminate or have the effect of discriminating, on the basis of handicap, against a qualified handicapped applicant or student. Academic requirements that the recipient can demonstrate are essential to the instruction being pursued by such student or to any directly related licensing requirement will not be regarded as discriminatory within the meaning

of this section. Modifications may include changes in the length of time permitted for the completion of degree requirements, substitution of specific courses required for the completion of degree requirements, and adaptation of the manner in which specific courses are conducted.

As stated in the Act, postsecondary institutions are required to adjust programs to ensure that they do not discriminate against students with disabilities, but they are not required to make adjustments that compromise the integrity of programs. Thus, insofar as faculty are familiar with Section 504, they may feel conflicting pressures to maintain the integrity of courses and programs while also providing for the unique learning needs of students with LD (Bigaj, Shaw, & McGuire, 1999; Scott & Gregg, 2000). As observed by Madaus and Shaw (2004), "Section 504 and the ADA ... are not prescriptive special education laws, like IDEA [Individuals with Disabilities Education Act], and result in varying services across institutions of higher education" (p. 85).

A second important issue pertains to potential differences between faculty perceptions based on individual faculty characteristics. Several researchers have reported that even within the same institution, faculty can have very different perceptions regarding accommodations and modifications depending on department affiliation and faculty rank. For example, Nelson et al. (1990) found that faculty within Education were slightly more likely than faculty in Arts and Sciences but considerably more likely than faculty in Business to make instructional, assignment, and exam accommodations.

Vogel et al. (1999) examined differences in faculty perceptions by faculty gender and academic unit. Although these researchers found little evidence of differences in faculty perceptions according to gender, they did find that faculty within some academic units were more willing to provide certain teaching and exam accommodations than were faculty in other academic units. In contrast, Bourke, Strehorn, and Silver (2000) found little evidence of differences between faculty perceptions according to academic unit, but these researchers found that non-tenure-track faculty were more likely than tenure-track faculty to report a greater belief that accommodations helped students with disabilities and a greater understanding for the need for accommodations, and to report that they had sufficient resources to implement accommodations.

A third important issue relates to the availability, or the perceived availability, of contextual supports within university contexts. Bourke et al. (2000) found that faculty who reported receiving greater support from their departments scored higher on several items designed to assess ease of implementing accommodations (range r = .29 to .47). Consistent with this perspective, Bigaj and colleagues (1999) noted that prior in- or preservice training related to learning disabilities was a strong predictor of community college faculty members' willingness to provide, and reported use of, teaching and exam accommodations.

In summary, it is important to more fully understand faculty perceptions of students with LD in postsecondary settings. Prior findings suggest that university faculty are willing to provide accommodations to students with LD, but interpretation of legal requirements as well as specific factors such as academic unit, faculty rank, and perceived availability of resources can affect these perceptions. The current investigation was designed to add to this area of research by addressing several issues.

The primary purpose of the study was to add to the existing literature because the majority of prior studies on these topics were conducted over a decade ago. A second goal was to develop and field test a single, comprehensive instrument of faculty perceptions that contained multiple items relating to a variety of issues facing faculty in postsecondary settings. Prior investigations have focused mainly on provision of teaching and exam accommodations, and although these issues are important, other factors such as knowledge of disability law, knowledge of learning disabilities, and availability of resources also appear to be important for understanding faculty attitudes. A third goal was to examine differences in faculty perceptions by several demographic and contextual factors. Although research has been conducted on this topic, there remains a need to further explore how various individual and contextual factors might contribute to differences in faculty perceptions.

METHODS

The investigation was conducted in a large urban, private university in the midwestern United States. According to *U.S. News and World Report's* annual ranking of America's best colleges, during the past 10 years the participating university has consistently been ranked as a Tier 3 institution among national universities, and it is considered "more selective" on selectivity ratings. The university's stated mission is focused on teaching and service with a commitment to connections with the community.

At the time of this study, over 23,000 undergraduate and graduate students attended the university with approximately 15,000 undergraduates and over 8,000 graduate students. Of that population, approximately 250 students (less than 1%) were receiving disability support services for learning disabilities. This percentage of students with LD is consistent with the number of students receiving services for LD in colleges and universities nationally (Horn & Nevill, 2006).

Participants

The study focused on the attitudes and perceptions of all full-time faculty within the university. A total of 640 surveys were distributed to faculty, and 194 were returned. Although not ideal, our response rate of 30% is consistent with similar survey research conducted with university faculty (cf. Bourke et al., 2000). Two faculty did not respond to entire sections of the survey, and other respondents left items blank. Therefore, two surveys were eliminated. In addition, in some cases, our analyses contained different numbers of respondents due to missing data among the final 192 participants.

Approximately half of the respondents were female (48%) and half were male (52%). The majority of respondents (42%) were tenured, 26% more were tenure track, 23% were in full-time, one-year appointments, 6% were in full-time adjunct positions, and 3% were in long-term clinical positions. In terms of faculty rank, 31% of respondents indicated that they were Assistant level, 25% indicated Associate level, and 18% indicated Full Professor level. Other ranks included Instructor (23%); 3% of surveys were missing rank.

Instrument

The survey instrument was developed through an iterative process. In the first stage, we reviewed prior research on faculty knowledge, attitudes, beliefs, and practices related to educating adults with LD at the postsecondary level (Bourke et al., 2000; Houck et al., 1992; Nelson et al., 1990). This review yielded several prominent themes relevant for study. These themes are also reflected in Section 504 of the Rehabilitation Act (1973). The themes include faculty knowledge about federal laws related to non-discrimination in institutions of higher education, faculty attitudes toward students with LD, faculty understanding of and willingness to implement teaching and exam accommodations, and other issues related to resource constraints and fairness.

We also looked for prior published instruments used to assess faculty attitudes. The instrument developed by Houck et al. (1992) was particularly informative; consequently, the 14 items developed by those researchers were adapted and incorporated into our broader survey instrument.

The initial draft of the instrument was divided into sections based on themes identified in the literature, and items were subsequently developed to reflect each theme. The initial themes included (a) general knowledge of students with LD and laws pertaining to students with disabilities in postsecondary settings, (b) teaching accommodations, (c) exam accommodations, (d) support and resources, and (e) personal practices.

To evaluate the content validity of the instrument, we asked the director of the disabilities support program at the university and a faculty member at the institution who had expertise in the area of learning disabilities to review it. These individuals refined the instrument by identifying additional areas of importance, removing redundant items, and adjusting question wordings. The final instrument contained four demographic items relating to gender, teaching status within the university (e.g., tenured, tenure track), rank (e.g., Assistant, Associate), and academic division. An additional 41 items were rated on a Likert-type scale ranging from "1 = Strongly Disagree" to "5 = Strongly Agree."

Exploratory Factor Analysis

To examine the underlying factor structure of the instrument, we conducted an exploratory factor analysis using the maximum likelihood procedure (Gorsuch, 1983). Consistent with recommended procedures, an oblique rotation (promax) was utilized because we anticipated that the resulting factors would be correlated with each other (Gorsuch, 1983). Results indicated that 3 of the 41 items had low initial communalities and low factor loadings (i.e., below .40) on all factors, so those items were removed. The final model contained 38 items and 12 factors, accounting for 57% of the variance in faculty responses (see items in Table 1). All factors had Eigenvalues greater than 1.0, and an examination of the scree plot indicated that this factor structure was appropriate.

The first factor, Major Accommodations, contained five items related to faculty perceptions of providing major accommodations. These items consisted of questions related to faculty willingness to provide accommodations that went beyond the provision of reasonable accommodations. For example, the item with the highest loading, "I am willing to reduce the overall course reading load for a student with a verified learning disability," goes beyond expected accommodations and, in fact, could be perceived negatively. The last item on this factor had a negative factor loading, so the scores for this item were reversed prior to calculating factor means. The internal consistency reliability for this factor was high (α = .81).

The second factor, Willingness to Provide Exam Accommodations, included five items pertaining to faculty members' willingness to provide students with verified learning disabilities with a variety of exam accommodations (α = .72). The third factor, Fairness and Sensitivity, contained six items related to perceptions of the fairness of various exam and teaching accommodations (α = .72). The fourth factor, Knowledge of Learning Disabilities (α = .65), contained two items related to faculty knowledge of laws relating to educating adults with disabilities and their knowledge of the term learning disability. Factor 5,

Table 1

Results of Exploratory Factor Analysis of Faculty Responses to Survey

Factor and Item	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
F1: Willingness to Provide Major Accommodations (α = .81)												
16. I am willing to reduce the overall course reading load for a student with a verified learning disability.	.87											
15. I am willing to allow a student with a verified learning disability to complete "extra credit" assignments.	.81											
28. I am willing to grade students with verified learning disabilities on a different curve.	.79											
13. think it would be appropriate to allow a student with a verified learning disability to substitute an alternative course for a required course.	.53											
29. If a students with a verified learning disability did not adequately meet the course requirements despite receiving reasonable exam accommodations, I would give him/her the grade s/he earned (rev).	-.47											
F2: Willingness to Provide Exam Accommodations (α = .72)												
30. I am willing to allow students with a verified learning disability to take proctored exams in a supervised location.		.73										
25. I am willing to arrange extended time exams for students who have verified learning disabilities.		.71										
26. I am willing to change the method of responding to exams for students with verified learning disabilities.		.61										
31. I am willing to allow students with verified learning disabilities to use technology (e.g., laptop, calculator, spell checker) to complete tests even when such technologies are not permitted for use during testing.		.54										
19. I am willing to allow students with verified learning disabilities to tape record.		.41										

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Table 1 continued

Results of Exploratory Factor Analysis of Faculty Responses to Survey

Factor and Item	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
F3: Fairness & Sensitivity (α = .65)												
32. Providing testing accommodations to students with verified learning disabilities is unfair to students without (rev).			-.68									
22. Providing teaching accommodations to students with verified learning disabilities is unfair to students without (rev).			-.66									
17. I believe that I make individual accommodations for students as necessary who have disclosed.			.60									
20. I am willing to extend the "due dates" of assignments to accommodate the needs of students with verified learning disabilities.			.51									
6. I am sensitive to the needs of students with learning disabilities.			.49									
18. I believe that my overall teaching style permits all students to learn the materials regardless of their individual needs.			.41									
F4: Knowledge of LD (α = .65)												
1. I am familiar with section 504 of the Rehabilitation Act of 1973 *and* the Americans with Disabilities Act (1990), & implications for students with disabilities in institutions of higher education.				.72								
2. I know what the term "learning disability" means.				.55								
F5: Willingness to Personally Invest (α = .75)												
27. I am willing to spend *extra* time (i.e., in addition to normal office hours) helping a student with a verified learning disability prepare for an exam.					.84							
14. I am willing to spend extra time (i.e., in addition to normal office hours) meeting with students with verified learning disabilities to clarify and/or review course related content.					.75							

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Table 1 continued
Results of Exploratory Factor Analysis of Faculty Responses to Survey

Factor and Item	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
F6: Willingness to Make Teaching Accommodations (α = .74)												
12. I am willing to provide students with verified learning disabilities with copies of my overheads and/or PowerPoint presentations.						.95						
10. I am willing to provide students with verified learning disabilities copies of my lecture notes or outlines.						.81						
11. I am willing to provide students with verified learning disabilities with additional time to complete assignments.						.46						
F7: Resource Constraints (α = .89) (Negative Construct)												
47. Making adequate teaching accommodations for students with verified learning disabilities in my courses is unrealistic given time constraints and other job demands.							.96					
49. Making adequate testing accommodations for students with verified learning disabilities in my courses is unrealistic given time constraints and other job demands.							.85					
F8: Performance Expectations (α = .73)												
3. I believe that students with learning disabilities can be successful at the university level.								.73				
7. Students with learning disabilities are able to compete academically at the university level.								.67				
F9: Disclosure & Believability (α = .70) (Negative Construct)												
24. I believe that students use learning disabilities as an excuse when they are not doing well in my class.									.70			

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Table 1 continued

Results of Exploratory Factor Analysis of Faculty Responses to Survey

Factor and Item	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
F9: Disclosure & Believability **continued** ***(α = .70) (Negative Construct)***												
56. I find that students with learning disabilities wait to talk to me until they are not doing well in the class and then I find it hard to believe that they really have a disability.									.69			
55. I find that students with learning disabilities wait to talk to me until they are not doing well in the class and then it's too late to provide appropriate accommodations.									.66			
F10: Personal Action: Inviting Disclosure (α =.84)												
54. I make a statement in class inviting students with learning disabilities to discuss accommodations with me.										.94		
53. I include a statement in my syllabus inviting students with learning disabilities to discuss accommodations with me.										.76		
F11: Personal Action: Insufficient Knowledge (α =.74) (Negative Construct)												
48. Currently, I do not have sufficient knowledge to make adequate testing accommodations for students with learning disabilities in my course(s).											.79	
46. Currently, I do not have sufficient knowledge to make adequate teaching accommodations for students with learning disabilities in my course(s).											.55	
F12: Personal Action: Providing Accommodations (α =.71)												
52. I have had students with LD in my course(s) and have provided testing accommodations.												.89
51. I have had students with LD in my course(s) and have provided teaching accommodations.												.49

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Table 1 continued

Results of Exploratory Factor Analysis of Faculty Responses to Survey

Factor and Item	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Raw Score Mean	11.8	21.4	20.7	6.9	8.3	12.8	4.2	8.7	7.0	4.6	5.1	8.1
SD	4.4	3.5	3.1	2.1	1.9	2.6	2.1	1.5	3.0	2.7	2.4	2.2
Item Level Mean	2.4	4.3	4.1	3.5	4.1	4.3	2.1	4.3	2.3	2.3	2.5	4.1
SD	.89	.69	.62	1.1	.94	.88	1.0	.73	1.0	1.3	1.2	1.1
% Variance	12.3	4.0	8.1	4.8	5.4	6.8	3.3	2.9	3.2	1.8	2.1	1.8

Note. Abbreviated item wordings are provided. Only factor loadings greater than .40 considered.

Willingness to Personally Invest, contained two items related to faculty members' willingness to invest additional time – beyond their normally scheduled office hours – providing support to students with LD (α = .75). Factor 6, Willingness to Provide Teaching Accommodations, contained three items that were directly related to the provision of several types of teaching accommodations (α = .74). Factor 7, Resource Constraints, contained items that represented perceptions of resource constraints that made the provision of accommodations challenging (α = .89). The two items on this factor were negative; therefore, higher scores should be interpreted negatively. Factor 8, Performance Expectations, contained two items related to expectations for the performance of students with LD in higher education settings (α = .73). Factor 9, Disclosure & Believability, contained three items related to faculty perceptions of disclosure and the believability of disclosure (α = .70). These items are all negative, since they suggest that students do not disclose until they are performing poorly. Thus, higher scores on this factor should be interpreted negatively.

The final three factors each contained two items, all related to personal action (Inviting Disclosure, α = .84; Insufficient Knowledge to make accommodations, α = .74; and Providing Accommodations, α = .71). All three of these factors contained items that assessed faculty's current actions. At the bottom of Table 1, the raw score as well as the item scale mean on each factor is provided. For ease of interpretation, item scale mean scores were utilized for all analyses. This reporting provides the reader with an easy reference point because factor scores can be interpreted on the original response scale (i.e., "1 = Strongly Disagree" to "5 = Strongly Agree").

Procedures

Surveys were distributed through the internal mail system at the university, using individualized mailing labels. We also enclosed a postage-paid return envelope for completed surveys. To ensure anonymity, no identifying information was included on the surveys. All departments participating in the study contained more than five individuals, and thus provided some anonymity. Survey instruments were distributed during February. Two follow-up requests were sent via e-mail to all faculty, requesting that they complete and return surveys.

Two graduate assistants who were trained in data entry procedures, entered the data from returned surveys into an SPSS database. The consistency of this process was checked by comparing data entered into SPSS with hard copy responses on approximately 10% of returned surveys. Once all of the hard-copy surveys

were returned, 20 were randomly selected from the overall pool of assigned I.D. numbers. We then evaluated the consistency of the data entered by comparing the marked responses on these 20 surveys with the entered responses in SPSS. This process indicated that 100% of checked data were correctly entered.

RESULTS

Figure 1 presents the mean for each factor graphically. On the vertical axis, the original scale (i.e., 1 = Strongly Disagree to 5 = Strongly Agree) is represented. As illustrated, on average, faculty respondents had positive perceptions on Factors 2, 3, 5, 6, 8, and 12, with an overall group mean of "4" or above, indicating that, on average, faculty "agreed" on these constructs. As would be expected, lower average scores were observed on some of the negative factors. For example, on Factor 7, the mean rating of 2.1 indicates that, on average, faculty "disagree" that resource constraints make the provision of teaching and exam accommodations unrealistic.

Factor Correlations

Table 2 presents the factor correlation matrix. As expected, many of the factors were significantly associated with each other. However, the vast majority of the associations were in the low to moderate ranges. The factor Fairness and Sensitivity was positively associated with Willingness to Provide Major Accommodations, Willingness to Provide Exam Accommodations, Willingness to Personally Invest in supporting students with LD, and Willingness to Make Teaching Accommodations. These findings indicate that faculty who reported greater fairness and sensitivity were more likely to report greater willingness to provide various accommodations.

Second, Knowledge of LD (variable 4) was positively associated with Personal Action: Inviting Disclosure, Personal Action: Providing Accommodations and negatively associated with having insufficient knowledge to make accommodations (r = -.43, p < .001). Similarly, having insufficient knowledge to make accommodations (variable 11) was negatively associated with the provision of accommodations (variable 12, r = -.43, p < .001).

Also of interest were the findings related to perceptions of resource constraints. Faculty who reported greater scores on the Resource Constraints factor were less likely to be willing to provide major accommodations (r = -.24, p < .001), exam accommodations (r = -.31, p < .001), or teaching accommodations (r = -.33, p < .001). They were also less likely to actually implement accommodations (variable 12, r = -.31, p < .001) than faculty with lower scores on this variable. Further, faculty who gained greater scores on the Resource Constraints factor were less likely to be willing to personally invest in supporting students with LD (r = -.57, p < .001) and were more likely to indicate that they had insufficient knowledge to make accommodations (r = .37, p < .001) than were faculty with lower perceptions of resource constraints.

Group Comparisons

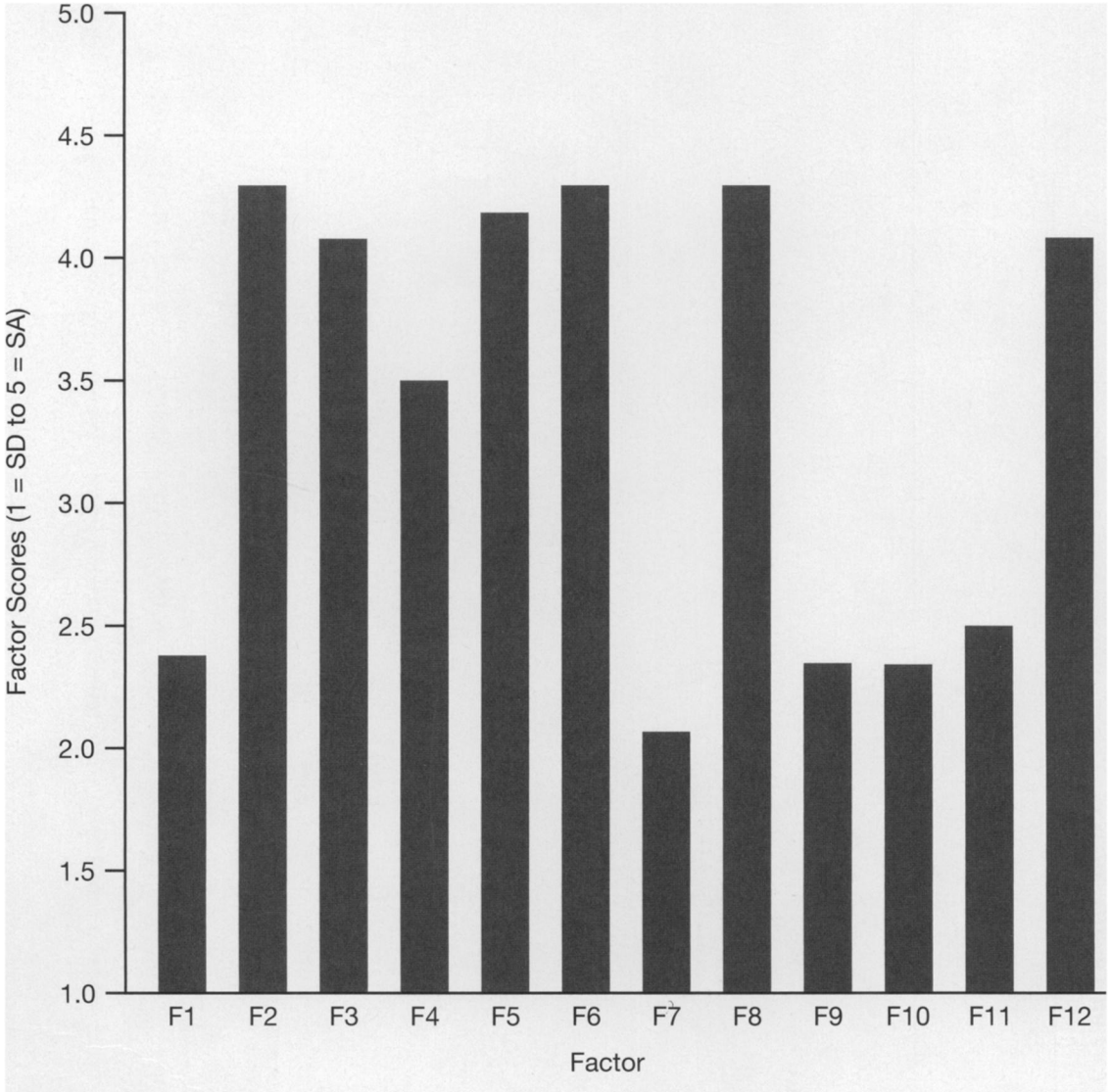
To examine potential group differences on the factors, a series of one-way analysis of variance (ANOVA) tests were conducted using the factor level means as dependent variables and faculty gender, academic unit, and rank as grouping variables. In cases where more than two groups were included as grouping variables, follow-up post-hoc comparisons were conducted to examine specific group differences.

In the far-right column of Table 3 we also provide an estimate of effect size using partial eta-squared, which is the default procedure in SPSS. In the context of one-way ANOVAs, partial eta-squared (εp^2) is equivalent to eta-squared (ε^2) and shows the proportion of variance in the dependent variable that is attributable to each effect (Pierce, Block, & Aguinis, 2004).

Faculty gender. Several differences emerged between female and male faculty on the study variables, especially on the positive scales (see Table 3). Females were more likely than males to be willing to provide exam accommodations (p < .01). Female faculty also reported greater scores on the Fairness and Sensitivity factor (p < .001), greater Knowledge of LD (p < .01), and greater willingness to personally invest in supporting students with LD (p < .01). Female faculty also reported greater performance expectations for students with LD (p < .05) and they had greater scores on the variable related to inviting disclosure in class (p < .01).

Academic unit. Comparisons of faculty perceptions by academic unit are listed in Table 4. These comparisons indicated that faculty in Computer Science, Telecommunications and Information Systems (CTI), Education, Music, and Theatre had significantly greater scores on willingness to provide exam accommodations than did faculty in Commerce and Liberal Arts and Sciences (LA&S). Faculty in CTI and Education also had significantly greater scores on willingness to provide teaching accommodations (variable 6) than did faculty in LA&S. Faculty in Education also had greater scores than faculty in Commerce on this variable. Faculty in Commerce and LA&S reported greater perceptions on the resource constraints variable than did faculty in Education and Law. Faculty in Education and Theatre reported greater scores on the personal action variable related to inviting disclosure than did faculty in Commerce, CTI, Law, and Music. Faculty in Education also had greater scores than faculty in LA&S on this variable. Faculty in Education and Theatre reported lower

Figure 1. Factor mean scores for all respondents.



F1. Willingness Provide Major Acc
F2. Willingness Provide Exam Acc
F3. Fairness & Sensitivity
F4. Knowledge of LD
F5. Willingness to Personally Invest
F6. Willingness to Make Teach Acc
F7. Resource Constraints
F8. Performance Expectations
F9. Disclosure & Believability
F10. Personal Action: Invite Disclosure
F11. Personal Action: Insufficient Knowledge
F12. Personal Action: Providing Acc

Table 2

Correlations Between All Factors on Faculty Survey

Factor	1	2	3	4	5	6	7	8	9	10	11	12
1. Willingness to Provide Major Acc	–											
2. Willingness to Provide Exam Acc	.32***	–										
3. Fairness & Sensitivity	.34***	.47***	–									
4. Knowledge of LD	.17*	.20**	.16*	–								
5. Willingness to Personally Invest	.29***	.44***	.47***	.18*	–							
6. Willingness to Make Teach Acc	.37***	.37***	.37***	.13	.37***	–						
7. Resource Constraints	-.24***	-.31***	-.35***	-.18*	-.57***	-.33***	–					
8. Performance Expectations	.17*	.34***	.32***	.14	.35***	.34***	-.30***	–				
9. Disclosure & Believability	-.03	-.19**	-.21**	.01	-.10	-.15*	.13	-.06	–			
10. Personal Action: Invite Disclosure	.09	.20**	.21**	.23***	.15*	.18*	-.12	.09	-.02	–		
11. Personal Action: Insufficient Know	-.11	-.16**	-.23**	-.43***	-.18*	-.15*	.37***	.14	.01	-.16*	–	
12. Personal Action: Providing Acc	.17*	.29***	.15*	.40***	.22**	.11	-.31***	.00	-.09	.11	-.43***	–

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3

Analysis of Faculty Perceptions by Gender

Factor	Faculty Gender: Female *M*	Female *(SD)*	Male *M*	Male *(SD)*	*F*	εp^2
1. Willingness Provide Major Acc	2.37	(.91)	2.36	(.86)	*ns*	.00
2. Willingness Provide Exam Acc	4.42	(.61)	4.15	(.67)	8.63**	.04
3. Fairness & Sensitivity	4.32	(.55)	3.98	(.63)	15.88***	.08
4. Knowledge of LD	3.70	(1.1)	3.27	(.97)	7.97**	.04
5. Willingness to Personally Invest	4.35	(.86)	3.96	(.98)	8.87**	.05
6. Willingness to Make Teach Acc	4.35	(.89)	4.18	(.84)	*ns*	.01
7. Resource Constraints	1.97	(1.1)	2.22	(.96)	*ns*	.02
8. Performance Expectations	4.46	(.77)	4.22	(.67)	5.27*	.03
9. Disclosure & Believability	2.28	(.99)	2.37	(1.0)	*ns*	.00
10. Personal Action: Invite Disclosure	2.59	(1.4)	2.02	(1.2)	9.03**	.05
11. Personal Action: Insufficient Knowledge	2.38	(1.2)	2.68	(1.1)	*ns*	.02
12. Personal Action: Providing Acc	4.16	(1.0)	3.94	(1.1)	*ns*	.01

Note. Factor means reported as average of item scale mean for ease of interpretation.
1 = Strongly Disagree, 5 = Strongly Agree.
Number of participants varies according to response rate (range 175-192).
*$p < .05$, * $p < .01$, *** $p < .001$, *ns* = not significant, εp^2 = partial eta-squared.

Table 4

Analysis of Faculty Perceptions by Academic Unit

Factor	Academic Unit (1) Comm *M* (*SD*)	(2) CTI *M* (*SD*)	(3) Educ *M* (*SD*)	(4) Law *M* (*SD*)	(5) Music *M* (*SD*)	(6) LA&S *M* (*SD*)	(7) Theat *M* (*SD*)	(8) SNL *M* (*SD*)	*F*	Post hoc	εp^2
1. Major Acc	2.30 (.85)	2.66 (.89)	2.59 (1.1)	2.90 (1.2)	2.59 (.93)	2.22 (.80)	2.50 (1.0)	2.80 (1.2)	*ns*		.05
2. Exam Acc	4.03 (.74)	4.53 (.54)	4.48 (.51)	3.89 (1.1)	3.76 (.64)	4.26 (.66)	4.56 (.43)	4.75 (.38)	2.48*	2, 3, 5, 7 >1, 6	.09
3. Fair	4.06 (.63)	4.25 (.64)	4.30 (.58)	4.50 (.38)	4.40 (.92)	4.05 (.63)	4.34 (.11)	4.55 (.44)	*ns*		.05
4. Know LD	3.35 (1.1)	3.42 (.77)	4.18 (1.0)	3.50 (1.7)	3.30 (.67)	3.33 (.99)	3.44 (1.5)	3.38 (1.4)	2.04[a]	3 > 1, 2, 6	.07
5. Personal Inv.	4.15 (.78)	4.11 (.93)	4.52 (.64)	4.75 (.50)	4.30 (.97)	3.97 (1.1)	4.69 (.46)	4.63 (.48)	1.93[a]	3, 7 > 6	.07
6. Teach Acc	4.28 (.76)	4.61 (.61)	4.75 (.50)	4.08 (.74)	4.08 (1.2)	4.05 (.96)	4.56 (.58)	4.75 (.50)	3.00**	2 > 6, 3 > 1, 6	.11
7. Resource	2.25 (.98)	2.00 (.91)	1.64 (.76)	1.00 (.00)	2.25 (.87)	2.30 (1.1)	1.75 (1.2)	1.38 (.48)	2.39*	1, 6 > 3, 4	.09
8. Expect	4.17 (.85)	4.44 (.57)	4.50 (.79)	4.63 (.48)	3.90 (1.1)	4.35 (.71)	4.19 (.46)	4.25 (.65)	*ns*		.03
9. Believe	2.49 (1.0)	2.13 (1.0)	2.51 (.10)	2.62 (1.6)	2.25 (1.3)	2.24 (.98)	2.88 (.96)	2.00 (.82)	*ns*		.03
10. Invite Disc.	1.83 (.80)	1.62 (.93)	3.40 (1.4)	1.25 (.50)	1.40 (.55)	2.22 (1.3)	3.13 (1.4)	2.88 (1.8)	5.63***	3 > 1, 2, 4, 5, 6; 7 > 1, 2, 4, 5	.18
11. Ins. Know	2.62 (.93)	2.14 (.95)	1.92 (1.1)	2.83 (2.0)	2.63 (1.8)	2.72 (1.2)	3.07 (1.6)	1.88 (.85)	2.08*	1, 6, 7 > 3	.08
12. Provide Acc	3.71 (1.4)	4.06 (.95)	4.52 (.52)	3.50 (1.3)	3.80 (1.6)	4.01 (1.1)	4.44 (.82)	4.33 (.58)	*ns*		.05

Note. Factor means reported as average on item scale for ease of interpretation.
1 = Strongly Disagree, 5 = Strongly Agree.
(1) Commerce, n = 26; (2) Computer Science, Telecommunications and Information Systems, n = 18; (3) Education, n = 25; (4) Law, n = 4; (5) Music, n = 5; (6) Liberal Arts & Sciences, n = 102; (7) Theatre, n = 8; (8) School for New Learning, n = 4.
[a] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$, *ns* = not significant.

Table 5
Analysis of Faculty Perceptions by Faculty Rank

Factor	Faculty Rank (1) Instructor *M*	*(SD)*	(2) Assistant *M*	*(SD)*	(3) Associate *M*	*(SD)*	(4) Full *M*	*(SD)*	*F*	Post hoc	εp^2
1. Willingness Provide Major Acc	2.64	(.89)	2.42	(.90)	2.11	(.81)	2.26	(.86)	3.01*	1>3	.05
2. Willingness Provide Exam Acc	4.14	(.68)	4.33	(.67)	4.35	(.60)	4.18	(.68)	*ns*		.02
3. Fairness & Sensitivity	4.14	(.68)	4.22	(.59)	4.07	(.65)	4.01	(.55)	*ns*		.01
4. Knowledge of LD	3.55	(.99)	3.36	(1.0)	3.46	(1.1)	3.47	(1.1)	*ns*		.01
5. Willingness to Personally Invest	4.23	(.86)	4.27	(.98)	4.09	(.90)	3.90	(1.0)	*ns*		.02
6. Willingness to Make Teach Acc	4.40	(.76)	4.44	(.67)	3.96	(1.1)	4.14	(.84)	3.56*	1, 2>3	.06
7. Resource Constraints	2.14	(.97)	2.18	(1.2)	2.18	(.97)	1.84	(.88)	*ns*		.02
8. Performance Expectations	4.43	(.70)	4.41	(.69)	4.17	(.83)	4.31	(.69)	*ns*		.02
9. Disclosure & Believability	2.42	(1.1)	2.27	(.99)	2.34	(.95)	2.23	(.98)	*ns*		.01
10. Personal Action: Invite Disclosure	2.07	(1.3)	2.78	(1.4)	2.14	(1.4)	1.90	(1.1)	4.49**	2>1, 3, 4	.07
11. Personal Action: Insufficient Knowledge	2.48	(1.2)	2.63	(1.3)	2.60	(1.2)	2.52	(1.0)	*ns*		.00
12. Personal Action: Providing Acc	4.00	(1.1)	3.85	(1.3)	4.26	(.91)	4.00	(.91)	*ns*		.02

Note. Factor means reported as average on item scale for ease of interpretation.
1 = Strongly Disagree, 5 = Strongly Agree.
*$p < .05$, **$p < .01$, ***$p < .001$, *ns* = not significant.
Instructor, $n = 44$; Assistant, $n = 60$; Associate, $n = 47$; Full, $n = 35$.

scores on the variable relating to insufficient knowledge than did faculty in Commerce and LA&S.

Last, there were two marginally significant effects ($p < .10$). That is, faculty in Education reported greater knowledge of LD than did faculty in Commerce, CTI, and LA&S, and faculty in Education and Theatre had greater scores on the variable related to willingness to personally invest in supporting students with LD than did faculty in LA&S.

Faculty rank. For a final analysis, we examined differences in faculty perceptions by academic rank (see Table 5). Results of these analyses indicated that faculty at the Instructor level were more willing than faculty at the Associate level to provide major accommodations. Further, faculty at the Instructor and Assistant levels were more likely than faculty at the Associate level to provide teaching accommodations, and faculty at the Assistant level were more likely than faculty at all other levels to invite disclosure.

DISCUSSION

The purpose of this investigation was to explore faculty perceptions of their attitudes, knowledge, beliefs, and practices related to educating students with LD in a large private, urban university. Overall, our findings suggest that the faculty in this sample had positive perceptions in terms of their knowledge of LD, their performance expectations for students with LD, their willingness to personally invest in supporting students with LD, their willingness to provide accommodations, and their the actual provision of accommodations. However, respondents had a lower mean score on the factor that assessed the practice of inviting students to disclose. The mean rating on this scale was in the "disagree" range, suggesting that faculty, on average, did not engage in this practice. These findings are consistent with previous research and suggest that faculty generally have positive perceptions about adults with LD and express a willingness to support students with learning disabilities within four-year colleges and universities (Houck et al., 1992).

Also consistent with prior findings (Matthews et al., 1987; Nelson et al., 1990), results showed that the faculty in this investigation indicated a greater willingness to provide minor, rather than major, accommodations. One explanation for this finding is that faculty members perceived that major accommodations altered underlying academic requirements in ways that compromised overall program quality. Thus, in some ways these findings could be viewed positively as they could be interpreted as being consistent with Section 504, which states "Academic requirements that the recipient can demonstrate are essential to the instruction being pursued by such student or to any directly related licensing requirement will not be regarded as discriminatory within the meaning of this section" (Rehabilitation Act of 1973, Subpart E).

Thus, faculty may have viewed the accommodations within this section of the survey as compromising program integrity and, therefore, were less likely to endorse them. Some evidence to support this is provided by the findings in the current study because the factor "Knowledge of LD" was comprised of questions pertaining to knowledge about laws and students with LD and the correlation between this factor and Factor 1 (i.e., Willingness to provide Major Accommodations) was weak, suggesting that faculty knowledge was *not* strongly associated with the provision of major accommodations. Unfortunately, we did not gather information on specific aspects of the Rehabilitation Act, so we can only speculate as the reasons for this finding. Future research into the relationship between knowledge of specific requirements in the Rehabilitation Act, Subpart E, and faculty willingness to make major accommodations would help shed light on this issue.

Our measure and the resulting factors also included several negative constructs. Thus, higher scores on these scales are indicative of greater negativity in perceptions whereas lower scores can be interpreted positively. For example, overall, faculty did not perceive resource constraints as inhibiting their ability to provide appropriate exam and teaching accommodations, as illustrated by the mean rating near "disagree" on this factor. Similarly, faculty "disagreed" that they had difficulty believing that students had LDs. These findings are positive in that they suggest that faculty did not perceive limited resources as inhibiting their ability to provide accommodations and they did not agree that the believability of LD was questionable.

These findings are important because findings from our correlational analyses indicated that faculty perceptions of resource constraints were negatively associated with faculty willingness to provide teaching and exam accommodations. Similarly, there was a strong negative association between resource constraints and willingness to invest personal time supporting students with LD. These findings are consistent with the findings reported by Bourke et al. (2000), who found that greater perceived support from academic departments was associated with faculty ability to implement various accommodations. Together, these findings suggest that it is important for university administrators, deans, and department chairs to be cognizant of the potentially detrimental effects of resource constraints on faculty support for students with LD.

Faculty "agreed" that they did not have sufficient knowledge to make appropriate teaching and exam

accommodations, suggesting that faculty as a group felt that having additional information in these areas would better equip them for making accommodations. These findings suggest that it is important to support faculty development around issues pertaining to students with disabilities. Such efforts may be particularly important given the findings from our correlational analyses, which indicated that Knowledge of LD was positively associated with Personal Action in terms of Inviting Disclosure and Providing Accommodations and negatively associated with having insufficient knowledge to make accommodations. Similarly, insufficient knowledge to make accommodations was negatively associated with the provision of accommodations. These findings are consistent with the results reported Bigaj et al. (1999), who found that prior training related to learning disabilities was a strong predictor of faculty members' willingness to provide, and their actual reported use of, teaching and exam accommodations. Together, these findings suggest that it is important to develop and implement training for faculty around these issues.

Our group comparisons were conducted to gain greater insight into the needs of specific subgroups of faculty within the university. Gender comparisons indicated that there were differences between male and female faculty, and all of the significant findings were in the same direction. In contrast to Vogel et al. (1999), we found that there were several differences between male and female faculty, and in all cases female faculty demonstrated greater levels of the positive attribute studied. It should be noted that both males and females demonstrated high levels on these variables; however, on average, females had greater scores than males. Since these findings are unique within this literature, it would be important to replicate them prior to making generalizations about the significance of the findings. However, these results are consistent with those of other studies of attitudes toward people with disabilities in finding that women have more positive attitudes than men (cf. Henry, Keys, Balcazar, & Jopp, 1996). Nonetheless, the challenge for all faculty is to effectively provide the support mandated for students with LD. Given the consistency of the direction of gender effects found here, further investigation into the relationship between faculty gender and perceptions of students with LD seems warranted.

Our analyses by academic unit showed differences between groups on some of the factors. For example, comparisons of academic units suggested that faculty within Education had very positive perceptions regarding students with LD. Our findings extend prior work in this area by making comparisons between all of the broad academic units within the participating university whereas previous researchers have examined differences between combined groups of academic units. Although the numbers of respondents within some of the units were low, the findings indicate that faculty within units other than Education also had positive perceptions and were willing to implement teaching and exam accommodations. For example, faculty within CTI had greater scores on willingness to provide exam accommodations, and were more likely to be willing to provide teaching accommodations than were faculty in other colleges.

Finally, our analysis of faculty rank suggested that faculty at the Instructor rank were more likely to provide major accommodations than were faculty at the Associate level. This finding could be interpreted as troubling since the types of accommodations included on the scale could potentially compromise program integrity. However, it should be noted that Instructors were also more willing than Associate-level faculty to provide teaching accommodations in general, which should be viewed as positive.

Faculty at the Assistant level were more likely than faculty at other levels to invite disclosure of learning disabilities, and they were also more willing than faculty at the Associate level to report being willing to provide teaching accommodations. These findings are consistent with findings reported in other investigations (Bourke et al., 2000) and suggest that, in general, junior faculty may be more attuned to the needs of students with LD.

Limitations

Several limitations should be considered. First, although the response rate was consistent with prior investigations of this nature, a substantial number of faculty did not respond to the survey. Hence, we have no information on how these non-responders' perceptions may have differed from those of the respondents. Another limitation that affects the generalizability of the findings is that the sample was drawn from one institution. Further, this was a cross-sectional investigation consisting of correlational data; therefore, it does not offer evidence of causality. We have no information about how faculty attitudes and perceptions change over time, and we do not know how the factors studied relate to one another over time. Future research that explores relationships between these types of constructs longitudinally and investigations that attempt to alter attitudes and perceptions experimentally would provide greater insights into how perceptions and attitudes might develop and change.

A final limitation is that faculty may have responded positively because support of students with disabilities is perceived as socially desirable. Faculty did, however,

have lower ratings on the factor that dealt with major accommodations, and they reported relatively low ratings on the factor related to the practice of inviting students to disclose in their classes. It seems somewhat unlikely that they would be willing to report low levels on these factors if social desirability was having a major effect on patterns of reporting.

Implications for Practice

The results of this investigation showed that faculty within a large private four-year institution had positive perceptions of teaching students with LD and reported being willing to make accommodations for these students. These findings are positive for students with LD. That is, they support the findings reported by other researchers and indicate that university faculty generally have positive perceptions of students with LD and are willing to support them in university settings. The data also highlight potential disparities in faculty willingness to implement various accommodations and supports and suggest, at least preliminarily, that faculty perceptions vary according to differences in gender, academic unit, and academic rank.

Although these findings should be replicated, they offer insights into potential areas for improvement. The findings could be useful for academic departments within four-year universities and for university disability support program staff in examining how faculty within their own institutions view students with LD. Such information could then be utilized to target specific populations for professional development activities and support. Alternatively, colleges or departments that seem particularly strong at supporting students with LD (e.g., Education) could be utilized as model programs within institutions and as sites for professional development activities.

Finally, it is important both to build on the interest of more junior faculty in supporting students with LD and to work with senior faculty to encourage their support. University faculty play a significant role in providing students with LD access to knowledge within college and university environments. Gaining further understanding of how their attitudes, beliefs, and practices relate to the success of students with LD within postsecondary settings will continue to be important as a growing number of students with LD gain access to these settings.

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FOOTNOTE

[1]Combined two- and four-year college attendance rates reported by the U.S. Department of Education.

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Please address correspondence to: Christopher Murray, University of Oregon, College of Education, 5260 University of Oregon, Eugene, OR 97403-5260; e-mail: cjmurray@uoregon.edu