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The Effects of Reading Personal Narratives Written by an Individual Who Uses AAC on the Attitudes of Pre-Professionals in Business

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A Solomon Four-Group Design was used to study the effects of reading personal narratives written by an individual with complex communication needs on the attitudes, potential future behaviors, and general experiences of 109 undergraduate business majors. The Attitudes Toward Nonspeaking Persons Scale (ATNP) and a scale of behavioral intentions modeled according to Ajzen's (1991) Theory of Planned Behavior were used as dependent variables. A sub-group of individuals in the experimental group participated in individual follow-up interviews. Results revealed individuals who read the narratives had more positive attitudes than those who did not; however, there were potentially reactive effects for pre-testing evident on one subscale of the ATNP scale. Interviews revealed a need for more explicit information about the workings of AAC and a need to change expectations about working with individuals with disabilities.

Keywords: Attitude change; Augmentative and alternative communication; Personal narratives

INTRODUCTION

Despite advancements in assistive technology, education, legislation against discrimination, and job preparation, individuals who require AAC continue to face barriers in obtaining employment (McNaughton & Bryen, 2002). These barriers may take the form of negative attitudes (McNaughton, Light, & Arnold, 2002). In a review of the literature on employer attitudes toward individuals with disabilities, Unger (2002) concluded that many employer concerns about the potential of a worker with a disability come from misconceptions, myths and a general lack of information. In addition, Unger found that employers with previous experience with employees with disabilities had more positive attitudes toward hiring individuals with disabilities and toward individuals with disabilities in the workplace in general. Research on changing attitudes toward individuals with disabilities has also concluded that both information about and

personal contact with people with disabilities are key to effecting change (Shaver, Curtis, Jesunathadas, & Strong, 1989). The nature of information and contact has varied across studies to date, and there is a lack of resources on how to use information and personal contact to change employer attitudes toward individuals using AAC. A further look at related studies does provide some guidance.

Information

In an effort to study potential employers, researchers have used undergraduate students in business or related fields as participants. In these studies, the method often involved presenting the information to the participants within a relatively short time period, and using a Likert-type scale for responding, where participants expressed their level of agreement or disagreement with a variety of statements. For example, Hunt and Hunt (2004) investigated the impact on the attitudes of

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undergraduate business majors of an hour-long presentation about persons with disabilities that included the following topics: barriers in employment, myths and stereotypes, laws pertaining to employment, and increasing awareness and instruction. The authors measured both the participants' attitudes, using the Attitudes Toward Disabled Persons Scale (ATDP) (Yuker & Block, 1986), and their knowledge about disabilities, using a 15-item multiple-choice questionnaire. The study employed a Solomon Four Group Design (Solomon, 1968), which involves two experimental and two control groups. For each set of experimental and control groups, one group completes a pre- and post-test while the other completes only the post-test. The intervention was effective in increasing knowledge about and positive attitudes toward people with disabilities, regardless of whether or not the participants completed a pre-test; and revealed that, overall, women's attitudes were more positive than men's. In a one-week follow-up, attitude change was maintained for the post-test only group but not the pre-test/post-test group. The authors noted that the attitudes of the pre-test/post-test group remained above their pre-test levels even though they were less positive at follow-up than at post-test.

In a study by Loo (2002), undergraduates in business management programs were more positive about people with disabilities following one classroom period (time unspecified) of discussion about employment issues, attitudes, and self-reflection. Women were more positive than men overall. The Attitudes Toward Employing Persons with Disabilities (ATEPD) scale was developed and used specifically for the study. The scale included a qualitative component via an open-ended question that asked participants for "any comments about attitudes toward individuals with disabilities" (p. 25). Comments (grouped as positive vs. negative) suggested a mix of reactions about whether or not individuals with disabilities should be treated "differently." Positive themes included admiration, positive past contact, and positive expectations. More negative themes included fear of not knowing how to act, and aversion to people with disabilities.

Although it focused on psychology as opposed to business students, Gorenflo and Gorenflo's (1991) attitude-change study involved providing information that incorporated different levels of AAC technology. The participants who received the information read a short paragraph about an individual with cerebral palsy that included a basic biography and an overview of the individual's interests, disability, and employment status. The participants' total scores on the Attitudes

Toward Nonspeaking Persons Scale (ATNP) (Gorenflo & Gorenflo, 1991) revealed more positive attitudes. However, further analysis revealed that the effects for information were limited to the evaluation subscale.

It can be difficult to abstract the exact amount or nature of information required for attitude change. Ultimately, there is no single message effective in changing attitudes, but Yuker (1994) concluded that information that somehow challenges previously held beliefs tends to be more effective. Lee and Rodda (1994) suggested that accurate information is crucial in order to discourage individuals from concocting information based on already established predispositions toward a particular group. The evidence indicates that this information can affect attitudes when delivered in a relatively short period of time, at least for adults in business. However it is not known whether or not the attitude change is lasting. In addition to accurate information, contact with individuals with disabilities has also been shown to be associated with more positive attitudes.

Contact

In general, contact with individuals with disabilities has been discussed retrospectively, by either (a) asking employers to reflect on the benefits of hiring people with disabilities, or (b) inferring the benefits of contact based on reports of more positive attitudes by employers who have contact with people with disabilities in the workplace. In a qualitative study of the perspectives of 14 employers and co-workers who worked with adults who use AAC, McNaughton, Light, and Gulla (2003) found that, despite challenges, business people noted several benefits to working with individuals with severe communication disabilities. One employer stated that, "Getting to know Employee A has opened up a whole new world for me" (McNaughton et al., 2003, p. 240).

McFarlin, Song, and Sonntag (1991) surveyed 189 executives from Fortune 500 companies, and found that attitudes were more positive among employers with an above average percentage of employees with disabilities in their organization versus those with a below average percentage. Specifically, the study revealed that those executives in the below average group were more likely to agree with statements that individuals with disabilities have higher absentee rates and slower career advancement. Levy, Jessop, Rimmerman, Francis, and Levy (1993) found similar results related to contact and attitudes with small business employers throughout the state of New York.

In addition to current employers, prospective employers have also been studied by surveying undergraduate students. Hunt and Hunt (2000) compared the attitudes of 122 undergraduate business students and 152 undergraduate rehabilitation students toward individuals with disabilities, using the ATDP and the Contact with Disabled Persons Scale (CDP) (Yuker & Hurley, 1987). Although they did find that rehabilitation students had more positive attitudes than business students, they also found that, regardless of group, women had more positive attitudes than men, and that overall, individuals who had more contact with persons with disabilities tended to have more positive attitudes towards them. Unfortunately, it is not feasible to arrange positive, personal contact with individuals with disabilities in all employment settings. However, individuals may be able to experience the benefits of contact and information, and may even change their attitudes about people with disabilities, by reading personal narrative accounts written by these individuals (Dal Cin, Zanna, & Fong, 2004).

Personal Narratives as Information and Contact

Narratives have the ability to teach, provoke emotions, and mold beliefs and may even help to elicit change in deeply rooted attitudes and beliefs (Dal Cin et al., 2004). There is a growing body of personal narrative accounts written by individuals who use AAC (Bauby, 1997; Fried-Oken & Bersani, 2000; Fried-Oken, Howard, & Stewart, 1991; Huer & Lloyd, 1990; Siekiewicz-Mercer, 1989; Warrick, 1998; Williams & Krezman, 2000). Selections from among these works have the potential to significantly impact individuals who are unfamiliar with people who use AAC. Currently, there have been no studies assessing the impact on any population of reading these personal accounts, even though doing so could well have a very positive impact on the lives of people with and without disabilities. In addition to approximating contact, narratives can also provide accurate information that can help to correct misconceptions and myths, and in a potentially more interesting and compelling format than a pamphlet or brief presentation.

Attitudes and Behavior

It is important to understand how a change in attitude might affect an individual's future behavior (McCarthy & Light, 2005). Attitudes are useful constructs for modeling broad patterns of behavior toward a particular object; however, they are not generally reliable at predicting the likelihood of a specific behavior occurring at some future point in time (Ajzen & Fishbein, 1977). For example, a global attitude measure may provide insight into an employer's positive or negative attitudes toward individuals with disabilities, but it will not reliably predict whether that employer will hire a specific person with complex communication needs. An attitude scale that could measure attitudes about hiring a specific person would be more predictive of that behavior. Such specific scales are considered to be measures of *intentions* rather than attitudes (Ajzen, 1991), and can serve as a useful bridge between attitudes and behavior. The theory underlying the study of intentions and behavior relationships is known as the Theory of Planned Behavior (Ajzen & Fishbein, 1980). The theory posits that people's intentions to engage in a behavior closely match their actual future behavior. Intentions under the theory can be thought of as an individual's willingness to engage in a behavior. Consequently, measuring intentions, or the amount of willingness, ultimately can be a measure of the likelihood of a behavior occurring in the future. Intentions can be measured according to three components: (a) *attitudes* toward the behavior (general evaluation, feelings, and thoughts about the behavior); (b) *subjective norms* of the behavior (whether or not others would endorse the behavior); and (c) *perceived behavioral control* (the extent to which the behavior can actually be executed by the person, depending on his or her knowledge, skills, and dependence on others) (Ajzen, 1991). The Theory of Planned Behavior has been used successfully to plan and measure intentions related to (a) being a lab partner with a classmate with HIV/AIDS (Warden & Koballa, 1995); (b) participating in community service activities (Prehar, McCarthy, & Tucker, 2004); (c) not exceeding the speed limit (Parker, Stradling, & Manstead, 1996); and (d) volunteering at a homeless shelter (Harrison, 1995). Generally speaking, bipolar adjective scales (good-bad, beneficial-harmful, etc.) are used for individuals to rate statements representing the three components of the Theory of Planned Behavior.

A complete picture of attitudes and behavior, then, must take into account not only general attitudes but also willingness to engage in certain behaviors (Ajzen, 1991). Changing attitudes may increase patterns of behavior toward individuals with disabilities that are broadly positive or negative. Changing intentions could increase the likelihood of hiring or choosing as a team member an employee with complex communication needs (Ajzen & Fishbein, 1977). Although real-world behaviors are ultimately of interest,

studying past patterns of behavior would only be helpful if participants have had previous experience in hiring individuals who use AAC. In order to study attitudes and intentions among participants who have not yet had this experience, a contrived situation may be needed in order to observe the behaviors of interest (Yuker, 1994).

Research Aims

There has been little research into the use of personal narratives to influence potential employers' attitudes toward individuals with complex communication needs. The current study investigated the impact on undergraduate business students of first-person narratives written by an individual with complex communication needs. These students were considered to be proxies of individuals who might make employment-related decisions in the future. The study investigated (a) the attitudes, (b) the reported future behaviors, and (c) the experiences of the undergraduate business students who participated.

METHODS

Participants

The participants were 109 students (juniors and seniors) enrolled in a business major program offered by a business college at a mid-sized, American university. The mean age of the participants was 21.48 years ($M = 21$, Range = 19–35). Of the 86.2% who responded to a question about their ethnic/cultural background, 97.9% were Caucasian, 1.05% were African American, and 1.05% were Korean. Participants had no reported previous experience with individuals with disabilities. Previous experience was defined as having a friend or family member with any type of disability (other than age-related hearing/vision loss); or having extended contact with individuals with disabilities in a school, volunteer, workplace, or other setting. Participants without previous experience were chosen to examine the effects of contact and to reach individuals whose baseline attitudes would tend to be less positive than those with previous contact. The participants themselves had no reported disabilities and were native speakers of English. They were recruited during a presentation made in junior- and senior-level courses, in which the study's goals, procedures, and eligibility requirements were explained. Nine different classes were contacted, with an average enrollment of 35 students per class. Four male and four female participants in the experimental groups were randomly selected to participate in

individual, follow-up, semi-structured interviews (Kvale, 1996) after they had completed the attitude scale post-test.

Design

To control for the potentially reactive effects of pre-testing, a Solomon Four Group Design was used (Solomon, 1968). The design is a combination of pre-test-post-test control group design and a post-test only control design involving two experimental and two control groups (Hegde, 2003). For each set of experimental and control groups, one group completes both a pre- and post-test while the other completes only the post-test. The design is particularly well suited to attitude studies in assessing treatment effects (Hegde, 2003), and has been used to study attitudes of pre-professionals in business toward individuals with disabilities (e.g., Hunt & Hunt, 2004). Assignment was done on a class-by-class basis. For each class, as participants elected to participate, they were placed into a column for male or female and then assigned to a group based on a randomly generated column of numbers (1– 4) next to the name. Efforts were made to balance the numbers of males and females per group, because evidence in previous AAC studies suggests that women tend to have more positive attitudes towards people with disabilities than men (e.g., McCarthy & Light 2005). The numbers assigned participants to one of four groups: control/post-test only (CPO), experimental/post-test only (EPO), control pre/post-test (CPP), and experimental pre/post-test (EPP). The breakdown of participants per group was CPO: $n = 29$ (12 females, 17 males); EPO: $n = 29$ (14 females, 15 males); CPP: $n = 24$ (12 females, 12 males); and EPP: $n = 27$ (13 females, 14 males).

Independent Variable

The independent variable was a set of four personal narratives written by an individual requiring AAC. The narratives described his experiences living with a communication disability, his experience with AAC, his employment history, and the challenges he has faced. The narratives were chosen by (a) reviewing available published first-person narratives in print and online (including presentations given at conferences or upon acceptance of an award); and (b) selecting those narratives that gave information specifically about the person, about how individuals using AAC communicate, and about how these individuals have been resilient in spite of challenges. Readings were in prose form and were told from the first person point of view. Narratives from four different authors were chosen for

independent review. The authors were contacted about the study and asked if they had any other narratives not currently in print to contribute meeting the criterion above. The narratives were reviewed by a bank manager, two professors of rhetorical studies (one of whom was also a person with a disability), a professor who had experience with employment and individuals requiring AAC, and a speech-language pathologist with extensive experience with adults and children using AAC. The panel was asked to rank order the narratives by considering their overall effectiveness in changing attitudes of undergraduate business majors. The narrative from the author with the highest overall ranking (2.6) was chosen for the study. The full text of the reading is available as supplementary online material (Please find this material with the following direct link to the article: http://www.informahealthcare.com/ [10.3109/07434618.2010.481562].).

The control groups read a passage that was matched on word count and reading level with the experimental reading, but dealt with the planets in the solar system. Selected readings were at a 10.4 grade Flesch-Kincaid reading level and contained 4,258 words. A glossary of terms was provided for each reading, based on questions that emerged from pilot testing.

Dependent Variables

All participants completed the 29-item Attitudes Toward Nonspeaking Persons Scale (ATNP) (Gorenflo & Gorenflo, 1991), and the Behavioral Intentions Scale (BIS) once or twice, depending on their assigned group. The Attitudes Toward Nonspeaking Persons Scale has been used in four published studies: Gorenflo and Gorenflo (1991); Gorenflo, Gorenflo, and Santer (1994); Gorenflo and Gorenflo (1997); and O'Keefe (1992). Two versions, a 29- and 27-item version have been used. The 29-item version was used in the current study to facilitate comparison with a previous study of the effects of information on attitudes toward individuals using AAC (Gorenflo & Gorenflo, 1991). The 29-item version's internal consistency was reported to be high (alpha = .9), with its two general evaluation and interactive/affective subscales likewise reported high internal consistency (alpha = .94 and .88 respectively) (Gorenflo & Gorenflo, 1991). The scale is completed by indicating the level of agreement or disagreement with statements (e.g., "This person is trustworthy" or "I would study (for a class) with this person") on a five-point scale. The endpoints are *strongly agree* and *strongly disagree*, with a score of three indicating a neutral response. In interpreting the scale, higher num-

bers indicate more positive attitudes. Validity of the scale was completed through correlation with the Attitudes Toward Disabled Person's Scale (ATDP) (Yuker, Block, & Young, 1966), with values of $r = .33$, $p < .01$. The ATNP scale was accompanied by a photo of the author of the narratives and the following text:

> [author name] is 30 years old. He cannot walk or talk clearly enough for people to understand his speech. He operates his electric wheelchair to get around and uses the machine in front of him to produce computer-based speech.

The photo depicted the author smiling outside on a sunny day, seated in his wheelchair in business-casual attire, with his communication system mounted in front of him, but with the point of view at an angle of 45 degrees so the author's body was not blocked by his system. Participants were instructed to complete the ATNP scale with the person in the photo in mind. This was done to ensure that each participant was reacting to the same referent, and because the wording of the ATNP scale refers to "this person" rather than people with disabilities in general.

The Behavioral Intentions Scale was developed to assess future behavior toward individuals requiring AAC. The scale surveyed three aspects of behavioral intentions according to Ajzen's Theory of Reasoned Action: attitude toward the behavior, subjective norms, and perceived behavioral control (Ajzen & Fishbein, 1980). Twelve, 7-point semantic differential scales (Osgood, 1969) were used to evaluate intentions, using bipolar adjectives related to five different statements. The scale was adapted from a behavioral intentions scale for the target audience of business majors and their intentions to participate in service activities (Prehar et al., 2004). A copy of the scale can be found in Appendix A.

Procedures

Participants in the pre-test groups completed the dependent variable measures at least one week and no more than 2 weeks prior to completing their readings. Following pre-testing, all groups (i.e., including the participants in the post-test only group) were given copies of their narrative, along with a glossary of terms face-up and a separately stapled packet of dependent measures face-down. Participants were instructed to complete their reading prior to completing their questionnaires. Two of four female research assistants were present in the room with participants to distribute and collect packets.

Participants who asked questions about the reading were directed to their glossary, and no additional information was provided for any participant. Participants received $10 for their completion of the study.

The eight participants (4 male, 4 female) from the experimental groups that were randomly selected to participate in interviews answered questions in a face-to-face format. Questions were designed to mirror the dimensions probed by the quantitative questionnaires, and included affective, evaluative, and behavioral intention components. Since the current coursework for the students focused on working in teams, questions included team-based and management-oriented questions. The questions asked were: (a) We are interested in your perspective on [author's] writing. Tell me about your reactions while you were reading; (b) You're working for a company and your manager assigns you to work on a team with someone like [author]. What would be the benefits of working on a team with someone like him? (c) Now that you've talked about the benefits you would have working on a team with someone like [author], what would be some of the challenges? (d) You are the manager of a company. What would be the benefits of hiring someone like [author]? (e) Now that you have mentioned the benefits of hiring someone like [author], what would be the challenges? (f) Is there anything you will do differently in your professional life now that you have read this? (g) What about in your personal life? All interviews were digitally recorded, transcribed, and coded. Participants were paid an additional $10 for completing a follow-up interview.

Because attitude changes may not always be permanent (Yuker, 1994), it was important to collect maintenance data related to attitude change. Because of scheduling problems related to the academic calendar, only five participants from the experimental groups could be reached for maintenance data. The participants (all of whom were from a single class) completed the ATNP scale and Behavioral Intentions Scale 2.5 weeks after their final experimental session. No additional compensation was provided for the maintenance session.

Data Analysis

Because the Behavioral Intentions Scale was new to this study, a Principal Component Analysis with Varimax Rotation and Kaiser Normalization was done to determine the relationship of the questions to the proposed three-factor theoretical structure of Ajzen and Fishbein (1980). This technique is useful for identifying how multiple items can contribute to single components that help explain the variance in data (Gorsuch, 1983). It has been used to determine the components underlying attitude and behavior scales in other studies of pre-professionals in business and their attitudes toward individuals with disabilities (Loo, 2002). The control pre/post group scores were considered as measures of test-retest reliability, and correlations between the Behavioral Intentions Scale and ATNP scale were done to help validate the construct with regard to attitudes toward individuals requiring AAC. A Multivariate Analysis of Variance (MANOVA) was completed using the post-test scores of the four groups on the ATNP scale and Behavioral Intentions Scale with post hoc testing done to investigate group differences. This procedure was consistent with recommendations on using Solomon Four Group Designs (Solomon, 1968). To facilitate comparisons with previous studies using the ATNP scale, results were completed, based on both the ATNP scale total scores and two ATNP subscale scores (Gorenflo & Gorenflo, 1991). Partial Eta squared was also calculated as a measure of magnitude of the main effects and any interactions (Meline & Schmitt, 1997).

Data collected from individual interviews were transcribed verbatim into written text. Data were then analyzed according to the procedures for inductive analysis and development of codes (Kvale, 1996; Patton, 2002). Data were broken into individual thought units and placed into a table with columns to match an individual (represented by a numeric code), the question asked, and a theme code. The data were then analyzed for themes by (a) numerically marking themes for samples of text; (b) developing rudimentary operational definitions for the theme based on the thought units falling within that code, and then recursively refining the operational definitions to accurately reflect increasing amounts of units reviewed; and (c) always considering the need for new themes if new text did not match current boundaries. Once the themes had been refined on the basis of samples taken from selected interviews and operational definitions established for the codes, all thought units in all of the transcripts were then coded. For reliability purposes, an individual outside the project was trained in coding, and then re-coded 10% of the data. The training consisted of a review of the operational definitions, with example quote and context; and a "test" sample, where coding was completed independently and disagreements were discussed until 90% agreement was reached. Inter-rater reliability was then calculated to be .86 using Cohen's kappa.

RESULTS

Behavioral Intentions Scale

Results of the Principal Components Analysis revealed a five-factor solution, with 10 of the 12 questions meaningfully loading onto the factors (meaningful loadings ranged from .68 to .91). The two questions not loading meaningfully both related to perceived control. Only one of the three questions related to perceived control meaningfully loaded (under my control/not under my control, at .889). Analysis of the five factors revealed a structure containing the following components (with the number of questions loading on each factor in order): affective (2), evaluative (4), subjective norm (1), perceived control (1), and behavioral intention (2). The division is not surprising given that the original first factor of attitudes often breaks down into affective and evaluative components. The first factor contributed to 55% of the total variance. The two questions not loading onto any factor were not included in the analysis. The questions in the five factor solution were all significantly correlated with both subscales of the ATNP scale and with each other using two-tailed Pearson Correlations ($p < .01$).

Total Score for the ATNP Scale and Behavioral Intentions Scale

Results of means and standard deviations of both the total ATNP scale scores and Behavioral Intentions Scale scores for the four groups are displayed in Table 1. Higher ATNP scores indicate more positive attitudes. Results of the MANOVA, including the total ATNP post test scores and Behavioral Intentions Scale post test scores for all four groups, indicated a significant effect for group for both the ATNP scale, $F(3, 107) = 12.77$, $p < .0001$, Partial Eta Squared = .277 and the ten-item Behavioral Intentions Scale, $F(3, 107) = 7.10$, $p < .0001$, Partial Eta Squared = .176. There was no significant effect for sex for either the ATNP scale or the Behavioral Intentions Scale. There was no

interaction between group and sex for either the ATNP scale or the Behavioral Intentions Scale. Because sample sizes were not equal, the Scheffe method of analysis was used for multiple comparisons in post hoc testing. Post hoc testing revealed significant differences between the experimental and control groups ($p < .05$), with the experimental groups reporting more positive attitudes and behavioral intention scores than the control groups. There were no significant differences between the two experimental groups or the two control groups, indicating that the presence of a pre-test did not affect the results in this analysis.

Subscale Analysis of ATNP Scale

Previous studies using the ATNP scale documented, through factor analysis, the existence of two meaningful subscales. The subscales included an interactive/affective factor, with items such as "I would study (for a class) with this person" and an evaluation subscale with items such as "This person is trustworthy." Results of a MANOVA, including the ATNP subscale post test scores for all four groups, indicated a significant group effect for both the interactive/affective subscale $F(3, 107) = 6.90$, $p < .0001$, Partial Eta Squared = .172 and the evaluation subscale $F(3, 107) = 14.14$, $p < .0001$, Partial Eta Squared = .298. There was no significant effect for sex for either subscale nor was there any interaction between group and sex for either subscale. Because sample sizes were not equal, the Scheffe method of analysis was used for multiple comparisons in post hoc testing. Results indicated a potential effect for pre-testing for the interactive/affective subscale, but not for the evaluation subscale. For the interactive/affective subscale, although the mean scores were significantly higher for the experimental pre/post test group versus the two control groups ($p < .05$), there were no significant differences between the experimental post-test only group and the control pre/post test group. The scores for the experimental post-test only group and the control post test only group were significantly different

TABLE 1 Mean Total Attitude Scores on the Attitudes Toward Nonspeaking Persons Scale (ATNP) and Behavioral Intentions (BI) Scale for the Two Control and Two Experimental Groups of Pre-professional Businesspeople.

Group	n	Mean ATNP Post Test	SD	Mean BI Post Test	SD
Control Post-Test Only	28	99.36	10.99	43.57	9.02
Control Pre/Post	24	101.71	11.09	43.167	9.43
Experimental Post-Test Only	29	111.66*	11.67	50.97*	8.60
Experimental Pre/Post	27	116.85*	12.23	52.15*	9.05

Note. Higher numbers reflect more favorable attitudes (maximum 145) and a higher willingness to engage in hiring or working with an individual using AAC (maximum 70).

*Significant difference from both control groups in Scheffe post-hoc testing $p < .05$.

($p < .05$). For the evaluation subscale, there were significant differences between the experimental and control groups regardless of the presence of a pre-test ($p < .05$) with the experimental groups reporting more positive attitude scores than the control groups. Results of subscale scores are displayed in Table 2.

Maintenance

Although it was not possible to collect maintenance data with all participants, five participants from the experimental groups were available for a 2.5-week follow-up. Two of these participants came from the post-test only group and three came from the pre/post group. Results of the Mann-Whitney Test indicated no significant difference for the participants on the ATNP scale Interactive/Affective subscale, $W = 25.5$, $p = 0.75$, ATNP scale Evaluation subscale, $W = 24.5$, $p = 0.60$, or the Behavioral Intentions Scale, $W = 31.5$, $p = 0.46$.

Qualitative Results

A table summarizing the qualitative findings is available as supplementary online material (Please find this material with the following direct link to the article: http://www.informahealthcare.com/[10.3109/07434618.2010.481562].).

Benefits of interacting/working with someone like the author

Participants indicated that working with a person with a disability would result in a number of benefits, including raising awareness of the fact that people with disabilities "have regular jobs" and "what it is like" to be a person with a disability. They also said that the experience would be of benefit in terms of future encounters and interactions with an individual with a disability because it would promote more willingness to "give the person a chance," "help the person if necessary," and "have more patience interacting with an individual with a disability." They also reported that the experience of interacting or working with a person with a disability would help to decrease feelings of "wanting to avoid interactions," which would provide opportunities to get to know the person better, learn how to communicate with him or her, and learn more about people with disabilities in general. Some participants reported that, because of the reading, they would make more effort to avoid underestimating individuals with disabilities. The narrative presented a highly qualified and capable worker, and the participants identified those strengths.

Other reported benefits were (a) the opportunity to hire a qualified person who might otherwise not have been considered and the contributions he or she would make to the company, and (b) the promotion of diversity in the workplace by "providing a unique perspective," offering "valuable insight," and bringing "different ideas to the table." The participants mentioned that it is beneficial "to work with people different than you", and that this will result in personal growth by, for example, widening personal circles of friends. They also said that hiring an individual with a disability would be of benefit to the company itself, which would be more likely to be perceived as having "integrity" and non-discriminatory hiring practices.

Challenges of interacting/working with someone like the author

Some participants responded to the challenges the author mentioned in the narrative with statements such as, "... like he said it might be hard to find people to believe in him or give him a chance." They noted challenges associated with face-to-face interviews with people with disabilities. Some of the participants mentioned that working with the author of the narrative would be "awkward" and "difficult." One said that the other team members would have more work to do because the participant assumed that the author would not be able to complete all assigned tasks, which

TABLE 2 Mean Attitudes Scores on the Interactive/Affective and Evaluation Subscales of the ATNP Scale for the Two Control and Two Experimental Groups of Pre-professional Businesspeople.

Group	n	Mean ATNP Interactive/Affective Subscale Post Test	SD	Mean ATNP Evaluation Subscale Post Test	SD
Control Post-Test Only	28	3.46	.56	3.42	.37
Control Pre/Post	24	3.51	.51	3.5	.39
Experimental Post-Test Only	29	3.86*[†]	.50	3.84*	.39
Experimental Pre/Post	27	4.02*	.49	4.03*	.41

Note. Higher numbers reflect more favorable attitudes with a scale of 1 being the most negative, 3 being neutral, and 5 being the most positive.

*[†]Significant difference from Control Post-Test Only Group in Scheffe post-hoc testing $p < .05$.

*Significant difference from both control groups in Scheffe post-hoc testing $p < .05$.

would result in tasks not being divided equally. They said that there would be challenges associated with team dynamics, but that many would be the result of the same or similar dynamics that occur in most any workplace (e.g., differences in opinions, different personalities); and that there are many reasons beyond having a disability for why some people "don't fit in" with a particular work culture. Participants noted the importance of finding a balance between people who were and were not "okay" with working on a team that would include someone like the narrative author, and were concerned that some individuals in the group would by very supportive whereas others would not be supportive at all.

Participants also said that it would be necessary but challenging to implement workplace accommodations needed to meet the author's specific requirements (e.g., providing additional time for training, ensuring all areas of the workplace are accessible), and noted a need for the author himself to be willing to be more flexible about the changes required. Most admitted that they had little or no experience in this area, but still felt that the responsibility for making/implementing accommodations would be theirs. They said that the process of making workplace accommodations would be difficult for most any group employees, given the general lack of experience working with individuals with disabilities, reflecting their own lack of experience and knowledge about someone like the author prior to reading the narrative.

Some participants said that they had problems with patience, and that this could hamper future interactions with individuals with disabilities. They referenced the author's patience and mentioned that they didn't think they measured up to his level. As such, they weren't sure if they could be successful in interacting with him.

Communication

In general, all but one of the participants felt that communication across the workplace would be a challenge, and that it would be difficult to teach other employees how to interact with the narrative author. The most frequent concern was about scenarios related to unresolved communication breakdowns (e.g., "... making sure everyone could understand him").

Communicating during presentations was also mentioned as a challenge, with the participants noting that group meetings and training are often part of the work day. Although they thought that one-to-one communications would be manageable, they were less certain how an individual using AAC could ask questions during a presentation, participate in "brainstorming," make

small group-to-large group transitions, or manage handouts.

Participants reported that there would be challenges involving the technical performance of AAC systems (i.e., that a system might not work correctly or end up breaking down altogether). They also assumed that their lack of understanding about the technology would mean that they would not be able to troubleshoot if problems did occur, and that it would be up to the employer to resolve any technical issues.

Author attributes

Participants mentioned the personal characteristics and strengths of the author, and said that his strengths included reliability, patience, being an open observer of human behavior, and being a hard worker. They noted that his drive to succeed was an indication of his character. One participant thought the author "had a lot to offer" and had "an incredible spirit." None of the participants mentioned anything that could be characterized as a negative personal characteristic; however, one participant suggested that the author would be better at "behind-the-scenes work."

Participants responded that they saw similarities between the narrative author and others without disabilities, but two of the participants reported an assumption that he experienced "biases" from others because of his disability. One participant thought he did not get the chance to speak often and spoke a lot when he was given the chance. Participants also responded that they thought the author was like any other person. One participant also reported that he viewed a person like the author as the same as anyone else. One person commented that the narratives were poorly written (mostly because of the lack of transitions from what they later learned were completely different documents), while others thought they were well written.

Emotional reactions to the writing

Three participants said they had stronger emotional reactions from the photograph than from the narrative they read. They did not discount the narrative's effects, but "just from an emotional level" was their typical response. Participants experienced conflicting emotional reactions of feeling bad for the author and feeling positive for him. Specifically, participants reported "feeling uncomfortable in the situation" and with finding a way to express to the author that they wanted him to be on the team and were "okay with the diversity." Participants also speculated about the emotional reactions of other employees;

specifically, that they would also feel uncomfortable with the situation and would not accept the individual. Participants were uncertain about how they themselves might change stereotypes that employees may have, and whether it would be their responsibility to make other employees understand he is competent. One participant was concerned that potential future employees without disabilities would be "intimidated by the diverse and unique work environment."

Participants expressed a desire to understand more about the AAC system used by the author, and had questions about how it produced speech and what exactly the author needed to do and know in order to operate the device. Questions also arose about the severity of his disability, which he had not discussed in the narrative.

No anticipated changes based on reading

When asked about potential changes they would make in their personal or professional lives as a result of reading the narrative, two of the participants responded that they "did not know" and two stated that reading the narrative would not make a difference. One participant responded that he would most likely not approach a person like the author and would not initiate an interaction with him. This was his reported inclination prior to reading the narrative as well. Four of the participants did not ever expect to work with an individual requiring AAC or anyone else with a disability. The participants believed it was rare to work with an individual with a disability, and that they would most likely never have contact with an individual with a disability. They therefore felt they would not make changes based on reading the narrative. Some of the participants said that they would "have respect for him" and would avoid talking about the disability, because work was not the place to discuss that topic. Again, this was also the reported disposition prior to reading the narrative. Two of the participants, who responded that they had never thought about people who could not speak or their employment situations, said that reading the narrative made them think about these issues, but they were uncertain about the impact it would have on their behavior in the future.

Other

Participants also responded with various general comments that did not fit into a theme and were, for the most part, unrelated to the topic of study (e.g., "Sorry about being late," "Are you a student here?", etc.).

DISCUSSION

Reading short personal narratives written by an individual using AAC had a positive effect on attitudes of the future businesspeople who took part in the current study, and may also have a positive impact on their future behavior in the workplace. However, narratives may need to contain more information about the use of AAC systems and how an individual "fits" into a business organization in order to be maximally helpful. Results are discussed in terms of behavioral intentions findings, implications of findings, limitations, and future directions for research.

Behavioral Intentions

Currently there is a lack of research into behavioral intentions within the field of AAC. The results of the current study are preliminary but invite further study in this area. The factor analysis did not support the three-factor theory proposed by Ajzen & Fishbein (1980). The concept of "attitudes toward the behavior" split into affective and evaluative components. This is not surprising, given that a similar split occurred with the ATNP (i.e., into distinct subscales of attitude measures); however, the theory calls for a unified attitude construct. Two of the items for "perceived behavioral control" did not load meaningfully onto any factor, indicating a need for further consideration of items in order to capture the construct. It is not typical to retain a single item to represent a factor, so the terms *difficult/easy* and *up to me/not up to me* will need to be modified in order to truly measure the factor. A scale of intentions is still only an a priori measure and not an actual outcome.

In addition to a modified scale of behavioral intentions, correlation with real-world behavior would be ideal. Previous studies involving behavioral intentions have followed such a model with participation in community service (Prehar, McCarthy, & Tucker, 2004) or being a volunteer at homeless shelter (Harrison, 1995). Given the legal implications of such study (i.e., because of anti-discrimination legislation), and the potential bias introduced by completing a scale prior to making employment decisions, any such study will be difficult but not impossible.

Implications of Findings

There are several important implications of the findings in the current study. The attitude scores of pre-professional businesspeople were neutral rather than negative in the control condition (all between 3 and 3.5 on a 5-point scale). As suggested

by the qualitative data, the attitudes to be changed are not based in hostility but rather indifference or lack of awareness. The barriers to be addressed are the lack of consideration of individuals with complex communication needs and, even more importantly, the lack of expectation to ever work with or even encounter an individual using AAC.

There was a positive effect for individual information on potential employer attitudes. Listing not only facts about an applicant but also a "story of success" is a potentially persuasive preemptive strategy. By law, an employer cannot discriminate based on disability; however, a personal story may help to alleviate the kinds of myths and misinformation among many employers (Unger, 2002). Since an interview might be the place where such stories are told, it may also be beneficial to consider using personal stories and anecdotes that could be provided ahead of time via email, letter, or other format amenable to a potential employer. This may be especially helpful because of the typically slow rate of communication when using AAC that could hinder the exchange of information about a new employee in conversation and small talk.

Subscale analysis indicated that the presence of a pretest may have sensitized participants to report more positive attitudes on the affective subscale of the ATNP than they would have otherwise. Care should be taken in future research with repeated measures of the ATNP. Hunt and Hunt (2004) reported similar issues with their Solomon Four Group Design, where attitude change was maintained for the post-test only group but not the pre-test/post-test group. Beyond design, the more reactive nature of the interactive/affective subscale of the ATNP scale can also be found in previous studies. For example, in Gorenflo and Gorenflo (1991), information was only shown to be effective in changing attitudes as reflected in the evaluation subscale. Gorenflo and Gorenflo (1997) reported a three-way interaction between the subscales of the ATNP scale, gender of the listener, and the perceived similarity of the listener to a viewed individual using AAC.

Limitations

Although a few data points were available for maintenance in the current study, there is still a lack of information about the durability of attitude change. Unfortunately, this problem is one that pervades many studies of attitudes toward individuals with disabilities (Yuker, 1994).

The narratives of only one person were used in the current study, making generalization to all people using AAC or all narratives difficult. The raters that selected narratives at the outset were not unanimous in the choices for the current study. In a related point, participants were asked about "this person;" not all people with disabilities. Reading about one person's story affected attitudes regarding that specific person. This finding suggests that it may be more effective to provide additional information about experiences in a narrative form rather than in more generic employment materials.

The absence of main effect for sex in the current study is inconsistent with previous research findings where attitudes of females were more positive than attitudes of males (Loo, 2002; Hunt & Hunt, 2004). The fact that the participants were limited to those who were in business programs and who had no previous experience with disabilities might explain this finding. Another possible explanation has to do with the volunteer nature of subject selection. Although compensation was offered to gain a wider range of participants, it is possible that only those individuals with an interest in issues related to disabilities enrolled in the study. Female raters were more positive than male raters for the evaluation subscale only in Gorenflo et al., (1994), and results based on sex were also limited to the evaluation subscale in one other finding in Gorenflo & Gorenflo (1997), which suggests that the finding for sex was not an absolute one. Analysis of the pre-test data in the current study suggested that the males and females did not differ at baseline on either ATNP scale total scores ($t(48) = .35$, $p = .73$), interactive/affective subscales ($t(48) = .20$, $p = .84$), or evaluation subscales ($t(46) = .39$, $p = .70$).

Face-to-face interviews also present a limitation. Although participants were told their responses would remain anonymous, participating in face-to-face interviews rather than written surveys with open-ended questions can lead participants to respond more favorably out of a desire to provide the desired response (Kvale, 1996). For the current study, interviews rather than written open-ended questions were used in order to ensure that the participants responded to all of the researchers' questions, and to allow for follow-up questioning if needed. The face-to-face questions were asked in an open-ended way, so as to convey a neutral attitude. The participants' responses covered both benefits and challenges. Unger (2002) noted that even written surveys are not immune to effects of what is perceived as the desirable response, particularly in recent years when anti-discrimination legislation has increased.

The fact that four of the participants reported that they did not expect to ever work with an individual with a disability merits further study, and is a potential limitation here because those

participants (and others like them) may not have considered the study to be relevant to their future. It is important to note, however, that the participants in the current study did not have previous experience with individuals with disabilities, so the idea of not working with these individuals was the situation that they were familiar with. Ultimately, a shift in education about individuals with disabilities, as well as increased visibility of individuals with disabilities in the workplace, will be essential to changing such a standard.

Future Research

The reactive nature of the interactive/affective subscale in the current study is an important factor to consider in future research. Feelings related to actions will be subject to social desirability, but they may also be more prone to be influenced by a single dramatic event. An individual's evaluation of a person with a disability appears to be more durable and, by design, more objective than affective responses. According to theory, however, it is the interaction of affective, cognitive, and behavioral states that make up attitudes.

Specificity of the scales and questions is important. Dempsey and McCarthy (2008) did not find an attitude effect for fifth grade students who read a personal narrative written by a girl who used AAC. The scale in the study asked children to rate attitudes toward children using AAC in general and not the child in the story. Kraus (1995) noted that attitudes toward specific behaviors were easier to capture, while capturing general feelings and behaviors was more difficult. Matching narratives with expectations is necessary in future research. For example, it may be useful to consider the types of behaviors one expects will have an impact on changing attitudes toward individuals with complex communication needs. Examples of pertinent behaviors with measures and intervention that could vary include a willingness to speak out against discrimination, approach and start a conversation, and proactively recruit for an organization.

Finally, Partial Eta Squared data in the current study showed only a portion of the variance was explained by the quantitative variables in the current study. It is important that future attitude studies continue to explore both quantitative and qualitative measures in order to obtain the broadest possible picture of attitudes toward individuals with complex communication needs and the interventions that may change negative attitudes towards them. Although it may be possible to continually look for differences between groups based on various background features, and thus account for incrementally larger amounts of variance, in the end the largest gaps are those dealing with effective interventions targeted at the most meaningful behaviors that influence participation of individuals with complex communication needs.

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Appendix A

Behavioral Intentions Scale

Please complete the statements by placing a check on one of the seven spaces between each word pair.

(1) When I think about working on a team with a person with a disability who uses a speech generating communication device, I think it would be . . .
unenjoyable ___ : ___ : ___ : ___ : ___ enjoyable

unpleasant	___ : ___ : ___ : ___ : ___	pleasant
wise	___ : ___ : ___ : ___ : ___	senseless
beneficial	___ : ___ : ___ : ___ : ___	harmful
incorrect	___ : ___ : ___ : ___ : ___	correct
good	___ : ___ : ___ : ___ : ___	bad

(2) Most people who are important to me think that
I should   ___ : ___ : ___ : ___ : ___   I should not
be on a team with a person with a disability who uses a
speech generating communication device.

(3) My position working on a team with a person with a
disability who uses a speech generating communication
device would be

difficult	___ : ___ : ___ : ___	easy
under my control	___ : ___ : ___ : ___	dependent on other people/ events
up to me	___ : ___ : ___ : ___	not up to me

(4) I will join a team with a person with a disability who
uses a speech generating communication device.
likely   ___ : ___ : ___ : ___ : ___   unlikely

(5) I will recruit someone with a disability who used a
speech generating communication device to work on
my team.
likely   ___ : ___ : ___ : ___ : ___   unlikely