Developing a GRE Review Workshop:
Assessing Needs for Persons With and Without Disabilities

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ABSTRACT

The Graduate Record Examinations® (GRE) assess skills to predict success in graduate school. This study assessed perceived GRE review workshop needs between persons with disabilities (PWD) and without disabilities (PWOD). Surveys administered at a mid-south public university (N=122) examined demographics, disability status, accommodations, and the importance of factors related to GRE review workshops. Significant differences were found regarding written practice tests and timing as well as the amount individuals would be willing to pay for a workshop. Implications for educators developing GRE review workshops and participant needs are addressed. Discussion includes the impact of testing accommodations on the workforce.

INTRODUCTION

The purpose of this manuscript is to assess student needs for a university level Graduate Record Examinations® (GRE) review workshop, specifically comparing persons with disabilities (PWD) and without disabilities (PWOD). This manuscript provides a brief introduction to current GRE preparation materials and testing accommodations granted under legislation for PWD. Considerations for offering a pilot weekend GRE review workshop are presented followed by results from a needs survey for future review workshops, which revealed significantly different importance ratings between PWD and PWOD. Finally, a discussion entails how current testing accommodations may impact students in the workforce and factors educators should consider when developing a GRE review workshop.

GRE

The GRE General Test is a graduate school entrance exam similar to the SAT® or the ACT® used for undergraduate admissions administered by ETS. The “GRE …General Test measures verbal reasoning, quantitative reasoning, and critical thinking and analytical writing skills…acquired over a long period of time…[that are] not related to any specific field of study” (ETS, 2007). The GRE in combination with undergraduate grade point averages strongly predicts cumulative graduate grade point averages (Burton & Wang, 2005). Upper level undergraduate students often feel pressure to perform well on placement exams such as the GRE for admission to graduate school. For example, according to the American Psychological Association (2003), admission to graduate programs in psychology typically requires a minimum score of 500 or above on a scale of 200-800 on both the Verbal and Quantitative sections of the GRE General Test.

A retail market, which encourages GRE preparation, has emerged in response to these performance pressures. Companies such as Kaplan® and the Princeton Review® offer numerous publications and services for test preparation. Online services range from free practice questions to Kaplan’s GRE Premium Online Course, which may cost up to $1,049 (Kaplan Test Prep and Admissions, n.d.). Classroom based services include Kaplan’s GRE Classroom Course at a cost of $1,199 and Princeton Review’s small group tutoring course at a cost of $1,500 (Kaplan Test Prep and Admissions; The Princeton Review, n.d.). Private tutoring is also available. Princeton Review’s 18 hour Premier Tutoring package cost $5700 (Princeton Review, n.d.).
Unfortunately, numerous students are not able to afford commercial preparation programs such as these. In addition, classroom based preparation courses are not conveniently located and do not represent a practical preparation option for many students. A simple Internet search provided numerous examples of how universities are responding to students’ needs for affordable GRE preparation. An increasing number of universities now offer free GRE workshops and many more offer workshops with fees through continuing education programs such as the University of South Carolina, the University of Arizona, and North Carolina State University (USC: Continuing Education, 2007; The University of Arizona, 2007; Office of Professional Development, 2007). It may be advantageous for universities to offer similar review courses to best prepare students for GRE testing especially when commercial preparation courses are geographically or economically unavailable.

Testing Accommodations and Accessibility

Recently, the number of PWD enrolled in college has increased. The 2004 American Community Survey reported that among civilian, non-institutionalized PWD ages 18-34, an estimated 12.94%-13.96% were enrolled in college or graduate school (United States Census Bureau, 2005). The 2005 American Community Survey reported that an estimated 13.60%-14.26% were enrolled in college or graduate school (United States Census Bureau, 2006). The authors assert that based on the increase in number of admissions, there is logically an increase in individuals taking admission examinations; however, no data exists to support or negate this assertion. Due to the increase in requests for testing accommodations (Mandinach, Calahan, & Camara, 2002), the assertion could extend to state that an increase has also occurred in the number of specific accommodations granted to facilitate the educational experience in the classroom.

Testing accommodations represent variance from typical standardized test administration with care taken to avoid change in measurements (Bolt & Thurlow, 2004). Numerous studies conducted during the 1980s examined the effects of accommodations on standardized testing (Bennett, Rock, & Jirele, 1987; Rock, Bennett, & Jirele, 1988; Willingham, 1989). Legislation has evolved to address the changing field of services to persons with disabilities beginning with the Rehabilitation Act of 1973, and becoming more prominent with the Americans with Disabilities Act of 1990 (ADA), and the Workforce Investment Act and Rehabilitation Act Amendments of 1998 (WIA). The Rehabilitation Act of 1973 and its amendments provide services for individuals in educational settings who might not qualify with a disability under the Individuals with Disabilities Education Act of 1990 (IDEA) (Rehabilitation Act, 1973). The ADA states that although a person may not meet all requirements of a credentialing process, an individual must still have the opportunity to a barrier-free application process and credentialing examination (King & Jarrow, 1992; as cited in Thurlow & Ysseldyke, 1995; ADA, 1990). Currently, under IDEA and IDEA related amendments of 1997, accommodations needed for testing are written into an individual education program (IEP) for students who meet the disability eligibility criteria (IDEA, 1990). IDEA requires a free and appropriate public education for all individuals aged 3-21. The IEP is reviewed once a year to account for the changing status of certain disabilities. An increase in requests for testing accommodations has occurred since the ADA was enacted, specifically more for learning disorders and attention-deficit/hyperactivity disorder (Ranseen & Parks, 2005). However, the increase in requests does not necessarily account for an increase in students in higher education requesting accommodations. Mandinach,
et al. (2002) reported there are numerous students who request extended time for the SAT, but then do not request an accommodation upon beginning college. A review by Bolt and Thurlow (2004) indicated the five most commonly allowed test accommodations include dictated responses to a scribe, large print, Braille, extended time, and a sign language interpreter for instructions. It should be noted these accommodations are the most commonly allowed, not necessarily the ones most commonly used. ETS allows test takers to request any accommodation or assistive technology they require, but proper documentation of a disability is needed before the accommodation(s) may be allowed during the exam (ETS, 2007).

Several studies support the concept that accommodations allow PWD to be tested at a comparable level as PWOD without significantly altering the content of the test (Willingham, 1989; Zurcher & Bryant, 2001). However, other studies dispute this idea or present mixed results (Bennett, Rock, & Jirele, 1987; Schulte, Elliot, & Kratochwill, 2001). ETS suggested GRE scores not be the only criteria for graduate school admission. In the past, persons who used accommodations while taking the GRE had their scores flagged when sent to graduate schools. Consequently, tests taken by persons requiring reasonable accommodations were distinguished from tests taken without accommodations. In 2001, ETS announced they would no longer flag the GRE, (Fuller & Wehmen, 2003). However, if the test was significantly altered, such as if an entire section was omitted, scores may be flagged (ETS, 2007).

Recent legislation such as the ADA, IDEA, WIA, and the No Child Left Behind Act (NCLB) has spurred research regarding what accommodations are frequently allowed for persons with disabilities. NCLB encourages school districts to include all students in testing. Thus, students with disabilities require some accommodations to be able to test at the same level as their peers (NCLB, 2001). However, little if any research exists regarding what types of accommodations students with disabilities will need to prepare effectively for a standardized exam, such as the GRE. In the present study, students with and without disabilities were surveyed to assess potential existing needs in participating in a quantitative test preparation workshop.

**METHOD**

**Pilot Study: A Weekend Review Workshop**

Prior to the current study, a one and a half day GRE quantitative review workshop, funded by an internal grant, was offered through the psychology department at a mid-south university and conducted by the first and second authors. Workshop participants were nominated by their professors from the departments of psychology and counseling, nursing, or communication disorders and then invited to participate at no cost to them. The agenda included working practice problems step-by-step as a group, at home worksheets, a resource compact disc including web links to further test preparation sites, and math refresher sheets. Six students completed the workshop which included pre and post-workshop questionnaires to assess participant perceptions of workshop merit. The students were all female and either White or African American. Little other diversity existed among the participants and no one reported a disability.
Qualitative analysis indicated students believed the examples and explanations to be the most helpful components of the workshop. In addition, participants reported they liked the resource compact disc, small group size and the time the workshop was offered. Participants indicated they would be willing to pay $35-75 for the workshop they received. Further, participants reported they did not feel they had enough time in the workshop and suggested the workshop could be better suited to individual needs. While the specific meaning of the phrase ‘individual needs’ was not clearly explained by the participants, additional qualitative feedback from the group offered insight into future GRE workshop preparation. However, the small sample size and narrow degree of participant diversity were limitations.

Additional review workshops were planned, but the instructors first wanted to conduct a needs assessment to better focus future workshops on areas in which students perceived a need. The assessment also focused on identifying the needs of students with disabilities.

Present Survey Study

Description of the Participants. All participants were provided with the purpose of the survey, risks and benefits of participation and a statement that participation was voluntary as part of informed consent. The university institutional review board approved this research stating there was adequate protection of human subjects. One hundred and twenty-two students enrolled at a mid-south public university participated in the study. Ages ranged from 17-52 years with a mean age of 26.24 years (SD = 8.83). Females represented 67.2% of the sample (n = 82), while 32.8% of the participants were males (n = 40). Thirty-two participants (26.2%) were registered with the Office of Disability Services (ODS) indicating the presence of a confirmed disability, while 89 participants (73%) were not registered. It is understood by the researchers that disabilities vary greatly in their course, functional limitations and impact on quality of life. However, due to the small sample size overall of PWD types of disabilities reported were not used for analysis in the present study. One participant did not provide a usable response (0.8%). Most students were White (76.2%, n = 93) followed by Black or African American (16.4%, n = 20). Other ethnicities included American Indian or Alaska Native, Hispanic or Latino of any race, and two or more races (7.6%, n = 9). Juniors comprised 34.4% of the sample (n = 42), 20.5% were seniors (n = 25), 18.9% were graduate students (n = 23), 13.9% were freshman (n = 17), and 12.3% were sophomores (n = 15).

Data Collection. A self-report questionnaire was created for the purpose of this study and administered to all participants. The questionnaire focused first on demographic data such as age, year in school, and ethnicity. Participants were asked if they had a disability registered with the ODS and if so, what type of disability, accommodations used, and usefulness of the accommodations. A brief paragraph described the GRE. Students reported their history of taking, or intentions to take, the GRE and whether accommodations would be needed or desired. Furthermore, students indicated their level of interest in participating in a GRE quantitative review workshop at the university and rated the importance of 10 components of the potential workshop. The components were handouts, handouts in accessible formats, small group size, take home problems, timed paper and pencil practice tests, extended time paper and pencil practice tests, timed computerized practice tests, use of accessibility software, use of a calculator, and a reader/scribe. A five point Likert scale was used with the forced choice responses of: 1 =
Very Unimportant, 2 = Unimportant, 3 = Neither Unimportant nor Important, 4 = Important, 5 = Very Important.

Participants were obtained by one of four ways during a one month period as follows, (1) student volunteers were approached spontaneously in a student union building during a Disability Awareness Fair sponsored by the ODS and asked to participate (18.9%); (2) student volunteers were recruited from upper and graduate level psychology courses (54.9%); (3) copies of the survey were available in the ODS for visiting students to complete (4.1%); and (4) all students registered with the ODS were emailed the survey via the ODS listserv using an ODS staff member as the sender. Surveys were sent back to the ODS where the participant’s name and email address were removed before being forwarded to the researchers for analysis (22.1%).

RESULTS

Independent samples t-tests were performed to compare the importance ratings of various aspects of a potential quantitative review workshop between PWD and PWOD. A statistically significant difference was identified regarding the importance rating of including extended time paper and pencil practice tests among PWD, $t(110) = 2.303, p < .05$ (see Table 1). In addition, among all participants who indicated plans to take the GRE, PWD still rated extended time paper and pencil practice tests as significantly more important, $t(59) = 3.158, p < .01$ (see Table 1). Also, among students who plan to take the GRE, PWD view pencil and paper practice tests as significantly more important than PWOD, $t(59) = 2.306, p < .05$ (see Table 1). No significant difference was noted among students who indicated they would participate in a workshop if it were offered at the university, $t(68) = 1.391, p > .05$.

For analysis purposes, the following midpoints were used to assess the amount participants would be willing to pay for a workshop: $12.50, \$37.51, \$62.51, \$87.51, \$112.51$. Among participants who indicated they would participate in the workshop, PWOD indicated they would be willing to pay more, $t(69) = -2.077, p < .05$. PWD indicated a mean amount of $22.80 (SD = \$19.88)$ whereas PWOD would pay a mean of $37.04 (SD = \$25.93)$. Participants in general and participants indicating plans to take the GRE were not analyzed separately due to survey instructions asking participants to only mark how much they were willing to pay if they would participate in the workshop. Raw data may give a more accurate indication of the amount individuals would be willing to pay for a GRE workshop.

DISCUSSION AND IMPLICATIONS

The current study begins to update research in a much needed area. The current results suggest differences in perceived needs between PWD and PWOD in the context of GRE quantitative review workshops. PWD rated inclusion of extended time paper and pencil practice tests in a review workshop as more important than PWOD. This finding is in line with past research indicating extended time as one of the most commonly allowed and used accommodations. Lambert, Dodd, Christensen, and Fishbaugh (1996) found extended time ranked as the most often used accommodation among secondary educators (as cited in Bolt & Thurlow, 2004). Gajria, Salend, and Hemrick (1994) determined 94% of teachers used extended time (Bolt & Thurlow). As of 2004, 37 states allow extended time as an accommodation under
state policy (Bolt & Thurlow). In addition, among individuals indicating plans to take the GRE, PWD rated both paper and pencil practice tests and paper and pencil practice tests with extended time more important than PWOD. Accordingly, more research is needed to further explore the reason PWD believe these components to be more important than PWOD. Study results suggest PWD often value these accommodations in particular with regard to standardized testing. The perceptions of PWOD may stem from positive experiences of having these accommodations in other testing settings. Questions arise as to whether extended time practice tests were deemed
important due to actual need or if PWD are familiar with the accommodation and assume they need and will receive the accommodation when they test.

In addition, a question which arises from the findings of this study is why differences exist between PWD and PWOD pertaining to paper and pencil tests yet no significant differences are present pertaining to computerized practice tests. The test format most commonly administered is the computerized adaptive test and thus the paper and pencil importance rating between PWD and PWOD indicates PWD may be more comfortable with more traditional means of testing and more specifically an extended time traditional standardized testing format. A limitation of the study is that extended time computerized practice tests were not included as a possible component for the workshop. Extended time computerized practice tests may have yielded a significant difference between PWD and PWOD had the option for computerized practice tests been included in the survey instrument due to computerized testing being the most common test format.

University GRE review workshops need to account for PWD’s test preparation needs. If PWD will be taking the GRE with certain accommodations, their preparation should include the same accommodation(s) to most closely imitate the testing situation. For example, depending upon how far in advance of the actual test the workshop is occurring, workshops might include practice tests with regular time and extended time to allow participants to experience the difference between the two. Also, this type of preparation could provide some security for PWD in the event their accommodation request is not granted. Caution should be exercised before extended time practice tests are included in university workshops to ensure that PWD do not assume they will automatically receive an accommodation for the test. Further, clarification may be needed to state that receiving an accommodation in the workshop or on the exam does not imply similar accommodations will be available in future work roles.

A recent criticism of accommodations is that a “cookie cutter approach” is being used; meaning if an individual is labeled with a certain disability, the individual will receive certain accommodations regardless of whether the accommodations are actually needed or used. The standardized approach to accommodations fits well with the NCLB legislation. However, the cookie cutter approach is in direct opposition to the goal of IDEA which provides accommodations through IEPs (Townsend, 2007). University level GRE workshops should avoid the cookie cutter approach such as assuming PWD automatically want or need extra time just because it is one of the most common accommodations.

Among those who would participate in the workshop, PWD and PWOD also differed significantly in the amount they would be willing to pay for a GRE review workshop. PWOD indicated a willingness to pay more. However, after inspection of the raw data, the data may be skewed. Of the 21 participants indicating they have a disability and would participate in the workshop, only one individual stated they would pay more than $50 for a workshop. Whereas of the 66 PWOD indicating they would participate in the workshop, 16 PWOD indicated willingness to pay $50.01-$75.00, 3 PWOD indicated willingness to pay $75.01-$100, and 1 PWOD indicated they would pay more than $100. The use of midpoints for the quantitative analysis may have skewed results.
A more accurate way to assess the amount individuals are willing to pay should be included in future research. An example of specific components which would be provided in the workshop should also be given, allowing participants to better estimate a dollar value for the services received. When participants were asked to indicate how much they would be willing to pay for a workshop, they were not provided a workshop description and thus had no way to know what types of workshop components would be included in the registration fee. In addition, instead of providing $25 ranges for participants to choose from, ranges could be reduced to $5 increments to increase validity of responses. The response could also be left open-ended; however, a decision would then need to be made as to how data would be handled if a monetary range was given instead of a single dollar amount.

Preliminary descriptive statistics indicated some individuals stated intentions to take the GRE, but would not participate in a university preparatory workshop. An area for future research could focus on student beliefs regarding the need for preparation versus actual preparation for standardized exams such as the GRE. Furthermore, students may have indicated they would not participate in a quantitative review workshop, while they may have been willing to participate in a verbal review workshop. The scope of a similar future study should be broadened to determine if results can be generalized to a verbal review workshop.

With regard to limitations of the study, while the ODS has approximately 750 names on their listserv, the sample of PWD was small in comparison. Efforts to reach many PWD were impeded by outdated email addresses resulting in undeliverable attempts to forward the survey. However, it is estimated there were at least 200 valid email addresses with only 27 PWD responding, resulting in a poor rate of return. In the future, a larger sample of PWD would increase statistical power to identify differences between groups.

Another limitation of this study is that at the time of the study, the use of computer adaptive tests (CAT) for practice in a university level group workshop setting was not feasible due to resource constraints. Therefore, participant perceptions related to the importance of CAT was not included in the survey. Future research should include the CAT as computer assisted testing is the primary way the GRE is currently administered and is expected to remain the primary method of test administration.

In conclusion, results of this needs assessment indicate there are differences in perceived needs for a GRE quantitative review workshop between PWD and PWOD. Due to the sampling limitations previously mentioned, the generalizability of the study is limited. However, smaller state universities not located near larger metropolitan areas may present with similar results of this study. It is imperative to smaller universities to provide “in-house” testing preparation as other test preparation options are not as accessible to or affordable for many students. Future research should focus on a larger sample size including various demographics and research addressing the generalizability of these results to a GRE verbal review workshop.
REFERENCES


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