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The Pluck and Plug System: An Internet Based Program to Teach DSM Diagnosis

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Students in counselor education programs are required to have knowledge of *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; DSM–IV–TR; American Psychiatric Association [APA], 2000), diagnosis and understand differential diagnostic procedures. Counselor educators are required to integrate technology into their counselor education programs. The Zalaquett Pluck and Plug Application is an Internet-based program aimed at teaching *DSM* (4th ed., text rev.; APA, 2000) diagnosis through the use of two case analyses. The program also includes differential diagnosis and provides immediate feedback to users. A sample of 202 master's and doctoral students completed a survey rating the program. The survey assessed participants' perceptions of the introduction page, overall instructions, information provided, currency of the diagnostic information, degree in which both diagnoses follow *DSM* (4th ed., text rev.; APA, 2000) style criteria, differential diagnosis criteria, and usefulness of the program as a teaching tool. On a scale of 1 (low) to 5 (high), across categories, students rated the program highly and indicated it would be an effective tool to teach *DSM* (4th ed., text rev.; APA, 2000) diagnosis to students in training. Implications for counselor educators are discussed.

The Pluck and Plug System: An Internet Based Program to Teach *DSM* Diagnosis

Students admitted in counselor education programs come from different educational backgrounds and have varying degrees of knowledge about mental disorders

and corresponding diagnoses. Frequently, students have limited practice using the current version of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM–IV–TR*; American Psychiatric Association [APA], 2000). For some time, counselors have recognized the importance of including diagnostic training in counselor education programs (e.g., Fong, 1993; Furlong & Hayden, 1993; Hohenshil, 1993; Mannarino, Loughran, & Hamilton, 2007; Waldo, Brotherton, & Horswill, 1993). Currently, The American Counseling Association Code of Ethics (2005) and Council for Accreditation of Counseling & Related Educational Programs (CACREP) Standards (2009) 29, 33, and 34 outline the importance of training students in clinical mental health counseling programs to perform diagnosis and differential diagnostic procedures using diagnostic tools such as the *DSM-IV-TR* (APA, 2000). Counselor education faculty in CACREP accredited programs are required to provide theoretical and working knowledge of the most current diagnostic tool available. To fulfill this requirement, many counseling programs teach diagnosis and diagnostic procedures in a one-semester course. This is a difficult task to accomplish, as the most widely used diagnostic classification, the *DSM-IV-TR* (APA, 2000), is a complex book, and students feel intimidated by the way the information is organized (Mannarino et al., 2007). However, it is important for students to be adequately prepared to meet the challenge of diagnosis because it is a requirement of professional counselors (Hansen, 1999; Leifer, 2001).

Counselor education programs have progressively integrated technology into the teaching of basic counseling skills and clinical skills (Casey, 1999; Engels, Caulum, & Sampson, 1984; Hayes, Robinson, Taub, & Sivo, 2003). Faculty members continue to use technology in the classroom through multimedia presentations and computer assisted instruction (CAI; Hayes & Robinson, 2000; Passey, 2000). As technology became a prominent fixture in society, counselor education researchers indicated that the counseling field could not survive without the integration of technology (Harris-Bowlsbey, 1984). Engels and associates (1984) stated that technology should be integrated into counselor education in an effort to advance professional practice.

In a study conducted by Karper, Robinson, and Casado (2005), data was collected to determine if the integration of CAI in the counselor education classroom impacted academic achievement. The authors found that the integration of CAI in the classroom significantly improved academic achievement. They recommended the use of various multimedia resources, including audio, video, and other computer-based enhancements. Additional adaptations to learning in counselor education have emerged over time. Jones, Coker, Harbach, and Staples (2000) developed a software package based on a WebCam2000 for use in a school counselor education program. The purpose of the software package was to aid professors in providing virtual guidance and supervision to their students. Barnes, Clark, and Thull (2003) researched the use of web-based portfolios during practicum by counselor education students and Rochlen (2005) created a web based program for teaching case conceptualization skills. Each of these studies demonstrated the integration of technology into counselor education programs. However, there is limited research on the use of technology as a tool to improve the diagnostic skills of counselor education students.

In a study conducted by Tang and associates (2004) to determine which aspects of counselor education programs had the most impact on the perceived self-efficacy of students, both the clinical course work and clinical training (e.g., exposure to diagnosis

during practicum or internship) had a statistically significant effect on students' perceived self-efficacy. Caspar, Berger, and Hautle (2004) also found that repeated exposure to opportunities requiring use of diagnostic skills improved student confidence in their diagnostic skills. This research indicates the need for tools such as the Zalaquett Pluck and Plug Application, which allow students to practice diagnosis and the diagnostic process.

The Zalaquett Pluck and Plug Application

The Zalaquett Pluck and Plug Application (ZPPA; Zalaquett, 2004) is an Internet-based program designed to familiarize students with the process of diagnosing mental disorders and facilitate learning the use of the *DSM-IV-TR* (APA, 2000). The program follows the procedures outlined in the *DSM-IV-TR* manual.

ZPPA offers two case vignettes and a tree of diagnostic decisions leading to a final diagnosis for each case. The user-friendly computer-interface allows students to read the vignette and respond using a "pluck" and "plug" system to support the criteria leading to the diagnosis. Students move text from the screen narrative to the questions screen or check boxes to answer the questions presented. The program offers immediate feedback indicating if the choice is correct or incorrect. Students receive a written explanation of why the choice is correct or incorrect. In the second section of the program, students are requested to select an appropriate treatment for each client from a set of therapeutic options. Each of these options represents evidence-based treatments. Due to the upcoming changes proposed for the *DSM-5*, possible changes to the specific diagnosis are discussed in class at the completion of each case study. Students discuss how the proposed changes may impact the prevalence of the diagnosis, differential diagnosis, and multicultural aspects of the diagnosis overall.

Method

Students attending mental disorders or psychopathology courses in 2010 participated in this study. The sample consisted of 202 participants (75 doctoral students, 127 master's students). Participants were enrolled in a master's program in Counselor Education at a public university or a doctoral program in Counseling Psychology at a private university. The sample consisted of 195 females and 7 males. The representation of males in the sample is similar to the representation of males in the counseling field (Carey, 2011). The response rate of the survey was 100%. Participants completed a 26-item survey designed to assess ZPPA's quality and impact. The instrument assessed the following aspects of the ZPPA program: presentation and navigation, content, appropriateness, and scope. Some of the questions focus on the looks of the opening page, perceptions of the introduction page, overall instructions, overall program usefulness, quality of information provided, currency of such information, degree in which both diagnoses follow DSM (4th ed., text rev.; APA, 2000) style criteria, use of diagnostic style and criteria, perception of the program as a tool for beginners, quality of feedback provided, and educational value of the program.

Responses were scored on a scale of 1 (low) to 5 (high). *T*-tests were conducted to determine if there were any statistically significant differences in means between both

groups. Results were pooled for analyses after no statistically significant differences between groups were observed.

Results

Results indicated that 98% of the participants perceived the program to be user friendly. Approximately 100% of the participants indicated they would recommend the program to someone else who would like to learn about DSM (4th ed., text rev.; APA, 2000) diagnosis. On a scale of 1 to 10 (1= low, 10 = high), approximately 96% of the participants rated the program a 10 out of 10 (n = 194), the remaining 4% ranked the program a 9 out of 10 (n = 8). The results of the questionnaire were averaged to determine the mean score of each question. Results are reported on the table below.

Table 1
Mean Scores of Participant Responses to Questionnaire

Question	Mean Score
The looks of the opening page are	4.8
Introduction is	4.8
Instructions are	4.7
Overall program is	4.7
Overall the information is	4.9
Currency (how current it is) of the information is	4.9
Degree in which both diagnoses follow DSM style is	4.9
Use of diagnostic language/terminology is	4.9
For beginners, the training provided by the program is	4.8
Feedback provided with each answer is	4.9
Capacity of the program to support teaching diagnosis is	4.9
Educational value of the program is	5
Program appropriateness for teaching is	4.9
Clarity of the language/vocabulary used in this program is	4.9
The degree of freedom from biases of this program is	4.9
Goals of the program are	4.9
Coverage of the content to diagnose both cases is	4.9
Degree of innovation for presenting this information is	4.8
Relevancy of the program for beginner learners is	4.9

As demonstrated in Table 1, participants felt the program had educational value, would recommend the program to a friend to learn DSM (4th ed., text rev.; APA, 2000) diagnosis, and perceived it as appropriate for teaching DSM (4th ed., text rev.; APA, 2000) diagnosis. Students also reported ZPPA provided excellent coverage of diagnosis

through the cases provided. None of the participants indicated having knowledge of another program similar to ZPPA.

Discussion

The results indicated participants perceived ZPPA to be a helpful tool to teach DSM (4th ed., text rev.; APA, 2000) diagnosis and indicated they would recommend the program to others. Counselor educators may use ZPPA as a tool to allow students to improve their skills of differential diagnosis and overall use of the diagnostic process. Technology has become a tool that can no longer be ignored in the counselor educator's classroom (Booth & Watson, 2009). ZPPA's accessibility and user-friendly platform can aide counselor educators in teaching diagnostic processes in and out of the classroom. ZPPA can be accessed anywhere a student is able to get onto the Internet. Additionally, counselor educators can view the length of time each student needed to complete each case. Students may view a summary screen at the end of each case, which allows them to see the diagnostic criteria relevant to the relevant diagnosis for each case.

In a mental disorders course at a southeastern university, ZPPA is used to further student understanding of the *DSM-IV-TR* (APA, 2000) diagnostic procedures. The instructor directs students to review the cases, one discussing Bipolar Disorder and another discussing Panic Disorder. The cases and the procedures used to reach the diagnosis, as well as differential diagnosis procedures, are reviewed in class afterwards to respond to students' questions. This illustrates that ZPPA can be used as a standalone program or as part of instructional delivery in mental disorders or psychopathology classes.

In addition, ZPPA can be used as a diagnostic tool in counselor education programs to assist students in the process of understanding differential diagnosis and interpreting the proposed changes of the *DSM-5*, by comparing them with current procedures in *DSM-IV-TR* (APA, 2000). An example of the differences between the *DSM-5* and *DSM-IV-TR* (APA, 2000) presented on the system can be illustrated by a brief review of Panic Disorder. Panic Disorder in the *DSM-IV-TR* (APA, 2000) can be described as with or without Agoraphobia (300.01 or 300.21); however the proposed changes to the *DSM-5* suggest Agoraphobia may become a separate code. These potential changes are outlined and discussed in class after the conclusion of the corresponding module included in ZPPA. Although these changes have not been finalized, reviewing the potential differences helps prepare students to analyze cases using dual perspectives. The discussion of the potential changes to the *DSM-5* will remain ongoing; however, it is important to note that the *DSM-IV-TR* (APA, 2000) also will remain in use for some time during the transition period. Therefore, it will continue to be important for students to understand the terminology, diagnostic criteria, and uses of the *DSM-IV-TR* (APA, 2000) as one of their primary diagnostic tools until the adoption of the new system.

Limitations

A limitation of this research was the use of a convenience sample, which limits the generalizability of the results. Additionally, the small percentage of male participants did not allow analysis of the data set regarding differences of opinion due to gender.

Conclusions

In conclusion, the virtual program provides a practical way to facilitate students' learning of DSM (4th ed., text rev.; APA, 2000) diagnostic classification processes. ZPPA is perceived to be an effective teaching tool for students in training and mental health practitioners seeking to sharpen their diagnostic skills. The use of this Internet-based program as a tool for counselor education students provides an additional resource to train clinicians.

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