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How Priming of Behavioral Symptoms May Affect College Students’ Decision to Diagnose

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ABSTRACT

Two disorders that have increased in diagnosis and in media awareness in the past two decades are Attention-Deficit Hyperactivity Disorder (ADHD) and autism. Psychologists use priming as a tool to test availability of schemas and concepts. The current study focuses on how priming of ADHD and autism symptoms affects college students’ diagnoses of the corresponding disorder. Also considered is that the control group will diagnosis ADHD more often because of the vast media awareness of ADHD today. The participants in this study were male and female undergraduates at South Dakota State University. There was no significance found for the two hypotheses in this study.

Keywords: ADHD, autism, priming, symptoms, diagnosis, disorder

HOW PRIMING OF BEHAVIORAL SYMPTOMS MAY AFFECT COLLEGE STUDENTS’ DECISION TO DIAGNOSE

Today many college students are bombarded with information about ADHD through television, news, books, school, movies, and even the internet. ADHD is a disorder characterized by symptoms such as difficulty paying attention, impulsivity, hyperactivity, difficulty completing tasks, etc (Comer, 2010). Many college students know someone who has ADHD, or they might know about ADHD firsthand. According to Comer (2010), of the individuals diagnosed with ADHD, 22 percent are admitted to college. According to the National Institute of Mental Health (NIMH) (2010a), 8.1% of the U.S. adult population is diagnosed with ADHD. ADHD is usually diagnosed in school-age children because their problems with inattention and hyperactivity are not noticed until they start school where they are expected to pay attention, sit quietly, and take turns. According to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR) (2000), the person must have had symptoms of ADHD before age 7, and the symptoms have to last for at least six months. The main categories of symptoms of diagnosis for ADHD are inattention, hyperactivity, and impulsivity (American Psychiatric Association, 2000).

Another psychological diagnosis on the rise today is autism (Levy, Mandell, & Schultz, 2009). Autism is a disorder characterized by symptoms of inadequacies in communication, socialization, and stereotyped or repetitive behaviors (Levy et al., 2009). Autism is a part of
the Autistic Spectrum Disorders (ASD), which are also known as Pervasive Developmental Disorders (PDD) (Wicks-Nelson & Israel, 2009). According to the NIMH (2010b), “1 in every 110 eight-year old children were diagnosable for an ASD.” According to Rosenberg, Daniels, Law, Law, and Kaufmann (2009), the changes and enhancements to the DSM-IV and the International Classification of Mental and Behavioural Disorders, Tenth Edition (ICD-10) can account for the great increase in ASD diagnoses. With the diagnosis of autism on the rise, college students have a greater chance of knowing someone with autism than the college students in the past two decades. The prevalence of children with ASD (0.01%) (NIMH, 2010b) is less than that of ADHD (9%) (NIMH, 2010c). Even though more college students may have more contact with people with autism than in the past, college students most likely have more contact with people with ADHD today.

Priming is a procedure in psychology used to influence a particular schema or behavior in an individual. According to Aronson, Wilson, & Akert (2010), psychologists may use priming as a tool to increase the recall of a specific concept or behavior. When someone has exposure to priming stimuli, the individual may react differently to subsequent stimuli than they would without the priming stimuli. In the current study, the priming tool is providing the participants with diagnostic symptom criteria of ADHD and autism. The participants in the group that are primed with ADHD symptoms may have increased ability to recall ADHD versus other disorders when they make their diagnosis. This would apply to the group that receives the diagnostic symptoms of autism as well.

The independent variable in the current study is priming with ADHD symptoms, autism symptoms, or not being primed with symptoms. There are two experimental groups; one group receives the symptoms of ADHD and the other receives the symptoms for autism. The control group will receive no symptoms. The dependent variable in the current study is the participants’ diagnosis of the child in a video clip. This video clip shows adolescents playing video and card games. The choices of diagnosis are anxiety disorder, Obsessive Compulsive Disorder (OCD), ADHD, depression, Oppositional Defiant Disorder (ODD), and autism. In this study, the first hypothesis is that priming the participants with symptoms of ADHD or autism will influence their diagnosis of the corresponding disorder. The diagnostic criteria provided may influence them to notice only symptoms of the disorder they just heard over symptoms of other disorders. In addition, the second hypothesis of this study is that the control group, which receives no priming of symptoms, will diagnosis ADHD more than the other disorders because of the vast coverage of ADHD in the media. College students are more likely to be exposed to ADHD, so this disorder may be more relevant to them than other disorders when making a diagnosis.

METHOD

Participants
The participants were 23 South Dakota State University (SDSU) students between 18-25 years of age. There were 5 male and 18 female participants. All participants were from undergraduate psychology courses. One participant’s data was deleted because of a video error. This participant’s information was not included in the final data analysis.
The researchers recruited participants from the following classes: Criminal Justice, Psychology, Sociology, and French. The researchers also recruited participants with an advertisement in the university newspaper for one week, which was open to all undergraduates. Participants received extra credit if it was offered in their classes or were given an alternative opportunity to gain extra credit if they could not participate in the study. All participants received a 10% off coupon to Dunham’s Sporting Goods after completion of a session. All participants could choose to be included in a drawing for gift cards and coupons from the following businesses: Pizza Ranch, Cubby’s Sports Bar and Grill, Sunflower Salon and Spa, Nick’s Hamburgers, Running’s, and Bravo’s. Only participants 21 years of age and older were put into the drawing for the gift cards and coupons from Cubby’s and Bravo’s.

Students that fell into any of the following categories were not eligible to participate in this study: students with a current or former diagnosis of any form of severe psychiatric or behavioral disorder; this included ADHD and autism; students who at the time of testing were under the influence of alcohol, illegal substances, any form of antidepressant or anti-anxiety drug, antihistamines or any form of cold medication; and students under 18 years of age. If any participant started to show signs of stress or anxiety, the researcher would immediately stop the session and refer them to the counseling center. This study was approved by the Institutional Review Board (1103003-EXP).

Materials
The SuperLab (4.0) computer program was used to present the pre-questionnaire, symptom descriptions, video, and post-questionnaire material to the participants. The pre-questionnaire included basic demographic questions and questions concerned with six relatively common behavioral disorders: anxiety disorders; depression; OCD; ADHD; ODD; and autism. These disorders were on the pre-questionnaire so the participants did not know that the researchers were only looking at autism and ADHD.

Group 1 received DSM-IV-TR symptoms of ADHD and group 2 received DSM-IV-TR symptoms of autism. Only the symptoms that were relevant to the video were included. A copy of the symptoms used is included in the Appendix.

The video was of adolescents playing a game of Uno and a racing video game. The adolescents in the video were acquaintances of the researcher. The researchers received written parental consent and child assent for the videotaping. The adolescents were told about what disorders the researchers were interested in after the videotape was recorded, so it would not influence the behavior of the adolescents during filming.

The post-questionnaire contained two questions: did the child in the video display any atypical behaviors; and could they offer an opinion for a diagnosis for that child. For their choices, they had a list of the disorders mentioned in the pre-questionnaire and an option to choose that no atypical behaviors were present.

Procedure
There were one to four participants in each session. At the beginning of the session, the researcher read the consent form to the participants and answered any questions regarding the consent form. The participants filled out the pre-questionnaire on the computer using the SuperLab program. After all the participants completed the pre-questionnaire, the researcher
read aloud symptoms of ADHD or autism depending on the group. The symptoms were also shown on the computer screen, so the participants could follow along. Group 3 was the control group and was not read any symptoms. The researcher instructed the participants to watch the video recording and focus on the behaviors of one particular adolescent in the video. The video clip lasted about four minutes. Participants completed a post-questionnaire after the video clip. At the end of the session, the researcher debriefed the participants and told them that this study is about measuring the prevalence of college students to diagnose a disorder when being primed with symptoms for either ADHD, autism, or no symptoms. The researcher also informed the participants that the adolescents in the video did not have any psychological disorders. The researcher gave each participant a 10% off Dunham’s Sporting Goods coupon and asked them to sign a sheet asking for their name, age, and email address if they wanted to be included in the drawings for the rest of the coupons and gift cards.

**Data Analysis**

The researchers transferred all the data from the pre- and post-questionnaire in the SuperLab program to Excel. The data were decoded and all of the statistics were calculated using Excel. Chi-square tests were used for the statistical analysis of the data for both of the hypotheses in this study.

**RESULTS**

The first hypothesis tested is whether college students diagnose ADHD or autism more when given the corresponding symptoms. The first Chi-square test measures the total frequency of diagnoses for each group (ADHD symptoms, autism symptoms, and no symptoms). Overall, the majority of the participants chose there was no behavioral disorder present (34.78%), contrary to the first hypothesis. The next highest diagnosis is ADHD (30.43%), followed by anxiety (21.74%). Autism, OCD, and ODD were all diagnosed the same amount (4.35%). No participants diagnosed depression (0%).

For the group primed with symptoms of ADHD, the diagnosis for ADHD (25%), anxiety (25%), and no diagnosis (37.5%) were higher than expected. The percentage of diagnoses for ODD (12.5%) was lower than expected. The participants were more often correct in choosing the right diagnosis, which is no behavioral disorder.

For the group that received autism symptoms, the percentage of diagnoses for ADHD (25%), anxiety (25%), and no diagnosis (50%), were higher than expected. The percentage of diagnoses for autism (0%) was lower than expected. Similar to the group that received ADHD symptoms, the participants in the group that received autism symptoms were more correct in choosing no behavioral disorders. The participants did not choose autism for a diagnosis in either of the groups that received ADHD or autism symptoms. The participants in the group primed with autism symptoms diagnosed ADHD and anxiety the same amount. There is no statistical significance found between the percentages of being primed with symptoms of ADHD or autism and the corresponding diagnoses chosen and what was expected, \( \chi^2(12, N = 23) = 8.61, p = 0.57 \). Figure 1 presents the percentage of diagnosis of the ADHD symptoms, autism symptoms, and no symptoms groups.
The second hypothesis tested is that the control group will diagnose ADHD more than the other disorders because college students have more exposure to information about ADHD. The percentage of diagnoses for ADHD (42.86%) was higher than expected, while the percentage of diagnoses for autism, anxiety, OCD, and no diagnosis were the same as expected. There was no statistical significance found for the second hypothesis, $\chi^2 (6, n=7) = 6, p = 0.42$. Although the participants in the control group diagnosed ADHD more than the other disorders, the results were not significant.

**DISCUSSION**

The first hypothesis of this study is that priming of diagnostic symptoms of ADHD and autism will increase the participants’ diagnosis of the primed behavioral disorder, but was not statistically supported. Priming the participants with diagnostic criteria for these disorders improved their accuracy in diagnosing the adolescent as typical with no behavioral diagnosis. Providing college students with professional and updated information on disorders may actually increase their accuracy in diagnosing disorders instead of relying on their previous experience with these disorders in the media, which may be inaccurate assumptions. Overall, ADHD was diagnosed more than autism, which may suggest that college students have more experience or knowledge of ADHD than autism. This information corresponds with NIMH (2010c) that ADHD is diagnosed at a higher percentage than autism in children.

Another possible explanation for why college students diagnosed ADHD more is because of the illicit use of the medications used to treat ADHD. According to Advokat, Guidry, and Martino (2008), most college students who abuse stimulant medications report obtaining these drugs from peers and use these drugs to both improve academic performance as well as to get high. Although it did not reach significance, perhaps more college students chose the diagnosis of ADHD because of their familiarity with the medications and not because of their familiarity with the actual behavioral disorder.

The second hypothesis in the current study is that the control group, which does not receive priming of diagnostic symptoms, will diagnose ADHD more than the other disorders because of ADHD’s prevalence in the media. ADHD was the most diagnosed in the control group, but it did not reach significance. One main reason why the data was not significant could be the small sample size. In the future, more participants would be needed to be able to reach a level of significance, at least for the second hypothesis. One reason for the larger variety of diagnoses than expected could be because the participants could have personal experience with one or more of the disorders listed as a diagnosis choice. For example, one participant diagnosed the adolescent with ODD, although the adolescent in the video did not display oppositional behaviors. Two explanations of this could be that the participant has either personal experience or recent knowledge from a psychology course and noticed symptoms of ODD that were not present. Another reason that the data did not reach significance may be because ADHD and anxiety have some similar features and the participants might have had trouble distinguishing between these disorders. According to Wicks-Nelson & Israel (2009), “on
average, about 25 to 35% of youths with ADHD, either in clinic or in community samples, have anxiety disorders.” College students may not just have experience with ADHD alone and anxiety alone, but have experience with ADHD and anxiety diagnosed for one individual. This may cause confusion about distinctions between these disorders. In continuing studies, researchers should focus on how giving participants professional information about disorders affects their accuracy for diagnosing. The data for this study did not support the first hypothesis that priming of symptoms would increase the diagnosis of the corresponding disorder. Future research could test whether presenting diagnostic criteria of disorders to college students will increase their accuracy in diagnosing than college students that are not presented with diagnostic criteria.

REFERENCES


SuperLab (4.0) [computer software]. San Pedro, CA: Cedrus Corporation.


APPENDIX A

Group 1: ADHD Symptoms: DSM-IV Symptoms of Attention-Deficit Hyperactivity Disorder

Symptoms of Inattention:
• Fails to attend to details or makes careless mistakes in activities.
• Has difficulty in sustaining attention.
• Does not seem to listen when spoken to.
• Does not follow through on instructions.
• Avoids or dislikes tasks requiring sustained mental effort.
• Is distracted by extraneous stimuli.

Symptoms of Hyperactivity-Impulsivity:
• Hyperactivity
  - Fidgets with hands or feet or squirms.
  - Leaves seat inappropriately.
  - Is often “on the go” as if “driven by a motor.”
  - Talks incessantly.
• Impulsivity
  - Has difficulty awaiting turn.
  - Interrupts or intrudes on others.

APPENDIX B

Group 2: Autism Symptoms: DSM-IV Symptoms of Autism

Qualitative impairment in social interaction manifested by at least two of the following:
• Lack of spontaneous sharing of enjoyment or interests
• Lack of social or emotional reciprocity

Qualitative impairment in communication manifested by at least one of the following:
• When speech is adequate, impairment in initiating or sustaining conversation
• Stereotyped or repetitive language

Restricted, repetitive, stereotyped patterns of behavior, interests, or activities manifested by at least one of the following:
• Abnormal preoccupation with stereotyped and restrictive interests
• Inflexible adherence to nonfunctional routines or rituals
• Stereotyped and repetitive motor mannerisms
**Figure 1.** The percentage of diagnosis for the group that received ADHD symptoms, the group that received autism symptoms, and the control group, which did not receive symptoms.