

Is it the Medication or the Symptoms? Examining Perceptions of ADHD in College Students

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## ADHD MEDICATION AND SYMPTOM PERCEPTION

## Abstract

This study examined how perception of people with ADHD is influenced by observation of ADHD symptoms and knowledge of prescribed stimulant medication use (PSMU). Ninety-two undergraduates individually watched a video of a target person either not showing symptoms nor indicating PSMU, not showing symptoms but indicating PSMU, showing symptoms but not indicating PSMU, or both showing symptoms and indicating PSMU. Participants then completed questionnaire measures of their degree of liking of and desire for affiliation with the target, as well as level of knowledge about ADHD and their perception of PSMU acceptability. Results indicated that depictions of symptoms were perceived more negatively than normal behavior, and that symptoms had a larger effect than PSMU on stigma. In fact, PSMU did not seem to significantly influence opinions of the targets, as a combination of symptoms and PSMU did not result in significantly lower scores, as compared to a depiction of symptoms alone. Generally, this provides evidence that the symptoms of ADHD are the primary driver of negative stigma, not PSMU.

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### Is it the Medication or the Symptoms? Examining Perceptions of ADHD in College Students

Attention-Deficit/Hyperactivity Disorder (ADHD) is a relatively common neurodevelopmental disorder that emerges in early childhood. In general, those with ADHD can struggle with impulse control, hyperactivity (often seen as restlessness in adults), and inattention. In order to be diagnosed, a patient must have shown multiple symptoms prior to the age of 12, and these symptoms must impact the person in multiple areas of life. These can be, but are not limited to, school, work, and social functioning (American Psychiatric Association, APA, 2013). There are three types of ADHD. Predominantly inattentive presentation is characterized by difficulty in sustaining attention in general, forgetfulness, disorganization, distractedness or in dedicating attention to small details, and an avoidance of tasks that require strong mental focus. There is also predominantly hyperactive/impulsive presentation, which displays itself through frequent fidgeting, difficulty staying in an expected place or waiting for one's turn, speaking excessively and interrupting others frequently, or feeling "driven by a motor," in which case relaxing and quietly doing leisure activities is impaired. In adults with ADHD, these symptoms often manifest less as hyperactivity and more as restlessness. Finally, there is Combined presentation, which encompasses both clusters of symptoms (APA, 2013).

The concept of ADHD as an enduring issue for adults is relatively new. Until the past few decades, ADHD was thought of as a disorder restricted to childhood and perhaps adolescence, but now there is a growing body of literature about the effects of adult ADHD (Zalsman & Shilton, 2016). In adults, the most common of the three presentations is predominant inattention, accounting for approximately 47% of cases. It is hypothesized that this may be due to an increased necessity of attention as one ages, which can lead to the

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symptoms becoming more obvious and the subsequent impairment more severe (Willcutt, 2012).

ADHD is fairly common, with a worldwide prevalence rate of roughly 5.29% (Polanczyk et al., 2007). In adults, the incidence is more evenly distributed between the sexes, whereas in children and adolescents there is a two to three times higher rate of diagnosis in males than females (Zalsman & Shilton, 2016). ADHD diagnosis is also distributed differently according to location. ADHD should have roughly the same prevalence of existence throughout the world, with a heritability of around 80%, but rates of diagnosis vary. For example, the United States and Europe have similar rates, but are higher than other parts of the world, such as Africa or the Middle East. It is generally believed that cultural and/or the environment in which one is raised contributes strongly to whether or not one is formally diagnosed, but perhaps not to whether one actually has the disorder (Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007).

Though one of the requirements for diagnosis is that symptoms cannot be better explained by another disorder (American Psychological Association, 2013), ADHD is very commonly comorbid with another mental disorder. Reale et al. (2017) found that 66% of children and adolescents with ADHD have at least one comorbidity. Most common among these were learning disorders (56%), sleep disorders (23%), Oppositional Defiant Disorder (20%), and anxiety disorders (12%). There is much more research regarding comorbidity in children, but research suggests these issues continue into adulthood. Adults with ADHD are more likely to have experienced oppositional, conduct, and substance use and abuse disorders than their non-diagnosed peers (Murphy & Barkley, 1996).

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### **Domains of Impairment Associated with ADHD**

ADHD is probably most associated with impairments in the academic domain. In adolescence and childhood, inattentive symptoms (e.g., difficulty organizing and avoiding doing tasks which require sustained mental effort) seem to be particularly troubling for those with ADHD, contributing to struggles with learning, lower grades on average, and worsened performance despite normative intelligence. Hyperactive/impulsive symptoms can also contribute to hindered academic performance. Teacher reports indicate that a student's hyperactive/impulsive symptoms can negatively influence their relationships in the classroom (Zoromski, Owens, Evans, & Brady, 2015). This may lead to even more difficulty in academic functioning.

It can be difficult to quantify this impairment in college students, as not as many people with ADHD attend and let alone graduate from college in relation to those without the disorder (Gray, Fettes, Woltering, Mawjee, & Tannock, 2016). However, there is some research that helps illustrate ADHD-related academic impairments in college settings. Gray et al. (2016) found that despite performing as well as the "average" non-ADHD peer on tests of intelligence and working memory, people with ADHD do not earn equivalent grades in college. Beyond the expected issues detailed above, the study also found that people with ADHD tended to face impairments in executive functioning skills in their daily lives. Some of these are not included in the DSM-5 code specifically but seem to have a hindering effect on academic performance. These include problems with thinking through problems thoroughly, impairment in time management, sluggish cognitive tempo, and psychological distress related to their ADHD symptoms (Gray et al., 2016).

Impairment in vocational functioning is another issue that many adults with ADHD face. This can be reflected in socioeconomic status, as adults with ADHD tend to have lower

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outcomes in this regard than their non-diagnosed peers (Agnew-Blais et al., 2018). It may be most apparent, though, in actual work performance. Through a simulated work study, Biederman et al. (2005) found that there were significantly more deficits faced in the simulation by those with ADHD than those without, including lower mathematical competency, decreased inhibition, and behavioral issues such as lowered ability to stay still, begin and complete a task, and pay attention. These problematic behaviors were observed to prevent those with ADHD from performing as well as the non-ADHD participants. The researchers also indicated that these issues are especially problematic in the current work world, which is increasingly geared toward teamwork and cooperative effort (Biederman et al., 2005).

Even in samples of adults whose ADHD is treated with medication, impairment is still apparent. A 2010 study (Safren, Sprich, Cooper-Vince, Knouse, & Lerner, 2010) found that life impairment appears to be greatest in the workplace, followed by interpersonal deficits. All of the 105 participants sampled by Safren et al. reported experiencing at least some impairment in the work setting, and analyses indicated that inattentive symptoms (e.g., simple mistakes due to forgetfulness, disorganization, distractedness) appear to be the most hindering in this regard.

ADHD is associated with other impairments as well. For example, significantly more people with ADHD than without have had their driver's license suspended (Murphy & Barkley, 1996). In addition, impairments in inhibition can relate to struggles with substance abuse. At the age of eighteen, people with ADHD have a higher risk than those that do not of being dependent marijuana and a higher risk of engaging in the usage of illicit drugs. In addition, addiction to nicotine and alcohol is greater in those with ADHD (Agnew-Blais et al., 2018)

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**Social impairment.** Another of the domains that people with ADHD suffer impairment in is that of social interaction. This is apparent in romantic relationships – for example, it is more likely that someone with ADHD will have multiple marriages than someone who does not (Murphy & Barkley, 1996) – but also in other relationships and in everyday social interactions.

Greene et al. (2001) found that, regardless of gender, people with ADHD have deficits in interpersonal skills that are in both specific types of interactions (e.g., at school, with family, with peers) and more broadly in their general interactions. Further, Green et al. found that people with ADHD tend to not score as high as others on general social competency, indicating an impairment in both social behavior and comprehension.

The severity of core ADHD symptoms seems to contribute to social and relational issues. Compared to peers with less severe symptoms, those with elevated symptoms report greater difficulties in dealing with interpersonal conflict and providing others with emotional support. In addition, having more severe symptoms is associated with a decrease in quality in friendships (McKee, 2014).

It has been hypothesized that difficulty in managing emotions and deficits in emotional knowledge may contribute to social maladjustment in those with ADHD (Zoromski et al., 2015; Bunford, Evans, & Langberg, 2018). More specifically, Bunford et al. (2018) found that there were three aspects of emotional dysregulation that were especially predictive of social impairment in this population. These included high excitability or impatience, difficulty in controlling behavior when faced with powerful emotions, and a relatively slow return to emotional baseline (i.e., lack of emotional flexibility).

The symptoms that characterize ADHD may well contribute to negative outcomes in social interactions. Masuch, Bea, Alm, Deibler, and Sobanski (2018) note that the display of

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core symptoms that define ADHD can be seen by others in social contexts as immaturity, a lack of interest in others, weakness of character, unpredictability, rudeness, and unreliability. In addition, Sacchetti & Lefler (2014) note that severity of symptoms is positively associated with both social impairment and levels of state and trait anger. Emotions that are poorly managed, like anger, are perceived by others and can be off-putting in social situations. Given the frequency and intensity of negative social interactions, it is perhaps expected that others tend to perceive those with ADHD rather unfavorably, which increases the potential likelihood of negative social stigma.

### **Stigma in Mental Illness**

Mental illness has often been conceptualized as a double-bind. On the one hand, the symptoms of mental illness directly cause distress and impairment. On the other hand, social stereotypes of mental illness are often inaccurate and negative in nature, and lead to stigma against those struggling with psychological disorders (Rusch, Angermeyer, & Corrigan, 2005), which also has negative consequences.

Stigma can be understood as a widely-held set of beliefs and stereotypes that contribute to a stigmatized individual's feeling or experience of societal devaluation due to an attribute or group membership. Stigmatic beliefs are often not an accurate representation of the person/group (Bell, Long, Garvan, & Bussing, 2011). Within stigma, several social dynamics occur, including (a) the labeling of a group, (b) believing and/or perpetuating negative stereotypes about the group (e.g., they are weak of mind or character, are dangerous to others, are incompetent; Rusch et al., 2005), (c) the subsequent loss of status for members of that group, (d) discrimination against members, and (e) attempts by stigmatized and non-stigmatized individuals to distance themselves from that group (Link & Phelan, 2001).

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There are two types of stigma: Public and self. Public stigma is manifested in outward behavior toward a stigmatized group (e.g., those with mental illness) that reflects the commonly held negative beliefs. Self-stigma entails the internalization of those stigmatizing beliefs by the people that are being stigmatized (Rusch et al., 2005), which creates negative self-regard that can exacerbate symptoms and impairment esteem (Link, Struening, Neese-Todd, Asmussen, & Phelen, 2001).

Unfortunately, the general public endorses negative beliefs about the mentally ill, such as those described above (Rusch et al., 2005). In addition to affecting a person's self-regard, stigma can reduce the number of opportunities a person may have. For example, stigma has been shown to impact the likelihood of those with mental illness to be hired for a position or be accepted as a tenant (Rusch et al., 2005). Concerningly, there is a large body of evidence that supports that both public and self-stigma reduces the likelihood that those with psychological disorders will seek medical or psychological help for their condition (Clement et al., 2015), perhaps due to the widely held public perception that mental illness is the responsibility or fault of the person (Rusch et al., 2005) and a subsequent anticipation of blame or confrontation.

### **Stigma in ADHD**

The research on stigma of psychological disorders is centered primarily on schizophrenia and depression, with sparse research regarding the stigmatization of adults with ADHD (Masuch et al., 2018). While there are some experimental investigations into attitudes toward those with ADHD, there is no national or international survey data to provide a baseline of general social acceptance of and prejudice against the disorder (Lebowitz, 2016).

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The symptoms of ADHD are experienced by others through interaction with or observation of the affected person. It has been shown that this experience can lead to the observer decreasing their amount of interaction with the person with ADHD, increasing their social distance from them (Canu, Newman, Morrow, & Pope, 2008). In fact, the most prevalent form of stigma displayed toward those with ADHD is a high desire for social distance, resulting in reduced social interaction with those with ADHD—in essence, ostracism (Lebowitz, 2016; Canu et al., 2008). It has also been shown that situations that involve teamwork (e.g. those involved in academic or other work) are ones in which stigma toward those with ADHD appears more consistently, perhaps due to reluctance to forge social relationships or to rely on another who is perceived negatively (Canu et al., 2008).

Desire for social distance is not the only manifestation of stigma often seen with ADHD. A 2005 study by Paulson et al. examined perceptions of ADHD, depression, and social anxiety in relation to “normal” behavior via videos that displayed aspects of each. Hostile mood was observed by the researchers more in reaction to ADHD than to the other abnormal videos, and ADHD elicited greater rejection than the control. In other words, behavior that is consistent with ADHD symptoms can result in greater hostility and rejection from peers than does normal behavior, lending to the idea that ADHD symptoms are stigmatized.

It is important to note that ADHD stigmatization is not limited to children and adolescents, but occurs in adults as well (Lebowitz, 2016). This seems somewhat illogical, as it might be expected that the public would recognize that adults with ADHD may have the necessary life experience to adequately manage their symptoms. Unfortunately, stigma is readily apparent to those with the disorder. In a 2018 study, Masuch and colleagues found that 88.5% of adults with ADHD expected to face discrimination for having the disorder in

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everyday life, and 69.3% perceived public stigma against them (Masuch et al., 2018). This stigma may be implicit or explicit (O'Driscoll, Heary, Hennessy, & McKeague, 2012). Either way, for adults with ADHD, the perception and subsequent subjective interpretation of public stigma can increase ADHD-related social dysfunction adding to the burden of the disorder itself (Masuch et al., 2018).

### **Stigma toward Use of Psychiatric Medication**

Stimulant medications, such as amphetamines and methylphenidate, have been available for a long time. A few (e.g., Ritalin), were introduced to the market beginning as early as the 1950s, making them some of the first psychiatric medications to be widely available (Frank & Glied, 2006). Stimulant medications are typically the first method used to treat ADHD. They have been shown to be significantly more effective in reducing unwanted symptoms of ADHD, as compared to most non-stimulant medications (e.g., NSRIs, SSRIs, tricyclic antidepressants). Despite this, there are a multitude of potential negative side effects associated with their use that might negatively predispose people to them. Some of these are emotional, like personality changes, increased anxiety, and irritability. Physical side effects are common as well, such as difficulty sleeping, diminished appetite, tics, stomachaches and headaches, and increased heart rate and blood pressure (National Institute of Mental Health, 2019). While there are non-stimulant medications designed for ADHD (e.g., Strattera), this study examines stimulant medication exclusively because they are typically the most widely-known treatment for the disorder.

There is virtually no research in regards to stigma against ADHD medication use, specifically. There is, however, some research regarding other psychiatric medication. For example, antidepressant use, one of the most widely used forms of medication therapy, is often stigmatized; therefore, so are those that use them. The stigma seems to be related to the

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perception that the user is emotionally weak and unable to handle problems. It also appears to stem from a lack of belief in the therapeutic ability of antidepressants (Castaldelli-Maia et al., 2011).

What little research is available points to the influence of misinformation regarding stimulant medications. Scuttio (2015) found that more accurate knowledge regarding the stimulant medications is associated with more positive attitudes about their use. There are many misunderstandings regarding stimulant medication for use in treating ADHD, but perhaps the most noted is the idea that these medications directly or indirectly result in substance abuse later in life, or that patients may become “addicted” to them. When one does not believe stimulant medications result in substance abuse or addiction, Scuttio (2015) determined that there were fewer negative responses to taking stimulant medication.

Worth considering is the idea that stigma toward ADHD could come indirectly from knowledge of medication usage, alone, through the medication’s implicit association with ADHD. In a 2008 study by Canu et al., it was found that people with ADHD are subject to stigma even when the disorder was only signaled with its diagnostic label. College students rated their peers with ADHD more negatively than those without, and even appraised them more negatively than peers with minor chronic medical issues. This points to the idea that simply knowing one has ADHD results in a less favorable view of that person, even when the appraiser does not see the target’s symptoms. In sum, if it is known that someone takes prescribed stimulant medication, it may result in stigmatization.

### **Current Study**

The current study will evaluate college students’ relative perceptions and acceptance of an individual that either shows ADHD symptoms and/or are known to be taking prescribed stimulant medication for ADHD, versus an individual with no such indications (i.e., control).

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Stigma toward the individuals who depict ADHD symptoms and/or stimulant medication use will be measured by two dependent variables: desire for affiliation (DFA) and how much the individual is liked (degree of liking, or DOL). Comparison of scores on these variables for the ADHD symptoms and/or medication targets will be compared to those of a control individual.

Based on the literature reviewed above, it is hypothesized that the individuals who depict ADHD behaviors will be perceived less positively than those that do not, reflected by lower DFA and DOL scores. It is also expected that individuals who indicate prescribed stimulant medication use (PSMU) will be perceived less positively than those who do not. Further, it is hypothesized that the display of symptoms alone will be perceived more negatively than the mention of medication alone. Finally, it is specifically anticipated that the individual who displays ADHD behaviors and mentions PSMU will be perceived more negatively than any other target.

### **Method**

#### **Participants**

A sample of 92 undergraduates was recruited through the psychology research participant pool at Appalachian State University, all of whom received class credit for their participation. All were age 18 or older ( $M[SD] = 19.61 (1.56)$  years) and did not have a physical disability or impairment that would hinder their ability to complete the procedure. Many were first-year students (45.7%; 26.1% second-year, 16.3% third-year, 12% fourth-or-higher-year). The participants tended to be female (82.6%), heterosexual (91.3), and Caucasian (90.2%). Further demographic detail can be noted in Table 1.

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**Measures**

**Video Vignettes.** Participants were randomly assigned to view one of four video vignettes. All videos featured the same actor answering the same nine general personal information questions (e.g., “What do you like to do in your spare time?”, “What are some of your weaknesses?”). The actor was a 21-year-old, White-appearing woman of Hispanic ethnicity. Videos ranged from four to eight minutes long. Longer videos were needed for conditions that displayed ADHD symptoms so that symptoms such as excessive talking and distracted thinking could be adequately portrayed. A measure of perceived video length found that participants judged the videos to be of similar relative length across the conditions,  $F(3, 88) = 2.33, p = 0.08$ . In addition, participants were asked their level of attraction to the actor (“to what extent were you physically attracted to the actor?”), measured on an 11-point Likert scale from 0 (not at all) to 10 (very much).

The video vignettes portrayed the actor as either (a) having normative behavior and not mentioning PSMU (control), (b) normative behavior and mentioning PSMU of Adderall (medication only, or MO), behavioral symptoms of ADHD but not mentioning PSMU (symptoms only, or SO), or behavioral symptoms of ADHD and mentioning PSMU of Adderall (SAM). Videos were briefly described to participants as impromptu interviews; participants were not told that the videos varied in portrayal of ADHD-related behaviors.

The videos of those with behavioral symptoms (SO and SAM) depicted enough behavioral ADHD symptoms to meet the DSM-5 criteria for clinical diagnosis of the Combined presentation. Specifically, there were five symptoms of inattention and five symptoms of hyperactivity/impulsivity displayed. Inattentive symptoms were as follows: *difficulty sustaining attention, not seeming to listen when directly addressed, difficulty with organization, frequently losing things, and being easily distracted by extraneous stimuli.*

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Hyperactive/impulsive symptoms were: *fidgiting and squirming, leaving the seat that the person was expected to remain in, feelings of restlessness, acting as if being driven by a motor, and excessive talking*. In addition, the actor in the SO and SAM videos made it known that she experienced her symptoms before the age of 12, the symptoms were present and impairing in multiple contexts, and that the only disorder the symptoms were attributed to was ADHD.

The scripts of the videos were evaluated for accuracy in portrayal of these symptoms by four licensed psychologists who specialize in assessment and treatment of college students with ADHD. The responses to each question were filmed independently and edited together as a series of clips. This was done to ensure that the videos displayed behavior exactly the same way when indicated (e.g., SO and SAM responses that did not involve medication use). The only differences between videos that displayed the same behavior (i.e., [a] control and MO, [b] SO and SAM) was the inclusion of two mentions of prescribed use of Adderall. Specifically, in the MO video the actor mentioned that she had taken it, but in the SAM video the actor mentioned forgetting to take it that day.

**Desire for Affiliation (DFA).** DFA was measured with three questions that immediately followed the video. The questions measured how likely the participant would be to affiliate with the portrayed individual in three contexts: as an **employee** (*Imagine you are an employer looking to hire for an entry-level office job that requires both collaboration and independent projects. How likely would you be to hire this person?*), as a **roommate** (*Imagine you are looking for a roommate. Please disregard gender preference and focus on personality. How likely would you be to agree to live with this person?*), and as a **friend** (*Imagine you have just met this person. How likely would you be to become friends with this person?*). Responses were made on an 11-point Likert scale that ranged from 0 (not at all

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likely) to 10 (highly likely). Satisfactory internal consistency was noted between the three questions (Cronbach's alpha,  $\alpha = 0.76$ ); as such, for efficiency and to minimize the chance of type I error, these were combined into one DFA index that reflects the mean score across the three items. This measure was created by the researcher specifically for this study in order to examine different dimensions of first impressions. Selecting to engage in an ongoing affiliation with someone (i.e., coworker, roommate, friend) may illustrate a different and more meaningful type of judgment than simply deciding whether one "likes" another.

**Degree of Liking (DOL).** The independent variable of DOL was measured with the Interpersonal Liking Measure-6, created by Veskler & Eden (2017). The original measure was shortened by one item regarding enjoying interactions with the person in the past. The five remaining items assessed how much the participant liked the portrayed individual, asking participants to rate their agreement to statements on an 11-point Likert scale from 0 (strongly disagree) to 10 (strongly agree; adapted from the original 9-point scale). The statements included measures of admiration (*There are aspects of this person's personality that I admire and I think that this person exhibits good judgment*), similarity (*I think that this person and I may have a lot in common*), and desire for future interaction (*I would like to get to know this person better and I think that future interactions with this person would be pleasurable*). Internal reliability of the scale was good ( $\alpha = 0.83$ ).

**Treatment Acceptability Questionnaire.** The Medication Treatment subscale of the Treatment Acceptability Questionnaire (TAQ; Kendall & Power, 2005) was used to assess pre-existing stigma against PSMU. The eight-items concerned the participant's opinions on the acceptability of PSMU to treat ADHD, specifically. Participants indicated their agreement to statements on the same 11-point Likert scale as described for the DFA (adapted from the original 6-point scale). Statements included judgments of the effectiveness of

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medication (e.g., *This treatment should be effective in changing someone with ADHD's behavior*), the necessity of the medication (e.g., *ADHD-related problems are troublesome enough to justify the use of this treatment*), as well as their personal support of its usage (e.g., *I would be willing to use this treatment if I had ADHD and I like or support this treatment*). The measure was adapted from the original to change the words “my child” to “a person with ADHD” for relevance. The internal reliability of the measure was good ( $\alpha = 0.89$ ).

**ADHD Knowledge Quiz.** The ADHD Knowledge Quiz (KQ; Bramham et al., 2009) was used to assess the level of knowledge that participants had about ADHD. The quiz consists of 20 true/false general knowledge questions concerning etiology (e.g., *ADHD is a disorder present from childhood* and *Whether you have ADHD depends on how you were brought up*), behavior and symptoms (e.g., *People with ADHD have difficulties concentrating* and *People with ADHD prefer short-term rewards over long-term rewards*), assessments of value (e.g., *ADHD is a problem of motivation* and *People with ADHD never fulfill their potential*), as well as demographics (e.g., *More females than males have ADHD*). Neither the PsycTESTS record nor the original study provided the answer key the researchers used, and no response was received from the creators when the answer key was requested. Therefore, an answer key was created and reviewed by five licensed psychologists who specialize in assessment and treatment of ADHD with substantial clinical exposure to college student clients. Despite this precaution, unfortunately, internal consistency was poor for this measure ( $\alpha = 0.22$ ).

**Demographics.** General demographic information (e.g., gender, age, sexual orientation, ethnicity) was collected on a questionnaire form (e.g., sex, gender, sexual orientation, age, ethnicity). In addition, the participant's prior exposure to ADHD was measured by asking whether (a) the participant, (b) someone in their family, or (c) a friend

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had been clinically diagnosed with ADHD (or another psychological disorder). They were also asked whether they suspected that they had ADHD (or another psychological disorder) without having a clinical diagnosis. The personal clinical diagnosis and self-suspected diagnosis were combined into one variable for analysis (0 = no, 1 = yes), as were the friends and family questions (0 = no, 1 = yes).

### **Procedure**

Participants first completed a consent procedure, during which they were told that the goal was to measure perceptions of behavior when examined from different points of view. The goal of examining ADHD stigma was not disclosed in order to avoid biased responses to the video-related measures. Participants then watched one of the four videos (described above), which was selected via random assignment. Participants then completed the measures in a standardized order: measures of DFA, measure of DOL, Treatment Acceptability Questionnaire, Knowledge Quiz, and finally demographics. Upon completion, the researcher debriefed the participant by explaining the aspect of the study examining ADHD-related stigma.

## **Results**

### **Preliminary Analyses**

In order to see if there were personal characteristics such as pre-existing knowledge of ADHD that relate to and possibly influence the dependent variables, Pearson correlational analyses were conducted between (a) the Knowledge Quiz total score, (b) Treatment Acceptability Questionnaire total score, and (c) level of physical attraction the viewer felt for the actor and DFA and DOL scores. Similarly, Spearman correlational analyses were conducted to determine whether (a) gender, (b) sexual orientation, or (c) having close friends and/or family who are diagnosed with ADHD related meaningfully with DFA and DOL. No

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statistically significant correlations were detected in any of these analyses ( $p > .06$ ). Given this, none of these variables were included as covariates in the subsequent ANOVAs.

### Primary Analyses

**Analyses of desire for affiliation across groups.** A one-way analysis of variance (ANOVA) was conducted to compare the effect of ADHD behavior and/or medication endorsement by the video target on participant's DFA in the control, MO, SO, and SAM conditions. This analysis was found to be statistically significant,  $F(3, 88) = 11.13, p < .001$ . Post-hoc comparisons using Tukey tests indicated that the mean DFA scores for the control ( $M = 6.87, SD = 1.79$ ) and MO ( $M = 6.52, SD = 1.15$ ) targets differed significantly from the SO ( $M = 5.16, SD = 1.62$ ) and SAM ( $M = 4.59, SD = 1.60$ ) targets. No other statistically significant differences on DFA were detected across groups. Calculations of Cohen's  $d$  values showed a large effect for all significant differences (see Tables 2 and 3 for more detail).

**Analyses of degree of liking across groups.** A one-way analysis of variance (ANOVA) was conducted to compare DOL score across the video conditions. This result was statistically significant,  $F(3, 88) = 8.80, p < .001$ . Post-hoc comparisons using Tukey tests indicated that the control target ( $M = 6.80, SD = 1.63$ ) was preferred to the SO ( $M = 5.22, SD = 1.29$ ) and SAM targets ( $M = 4.81, SD = 1.56$ ), as measured by DOL. In addition, the MO target ( $M = 6.18, SD = 1.35$ ) was also significantly better-liked than the SAM model. No other statistically significant differences on DOL were detected across groups. Examinations of Cohen's  $d$  showed a large effect for all significant differences (see Tables 2 and 3).

### Discussion

This study aimed to investigate whether negative perceptions of ADHD were influenced more by the person using stimulant medication (i.e., Adderall) to treat the disorder

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or by the observation of core symptoms themselves. Specifically, it was anticipated that either would result in negative perceptions, that symptoms would be more influential than medication usage, and that the stigma would be strongest when both were present. The data support that visible ADHD symptoms are associated with negative social stigma, both in terms of a desire to affiliate with the observed individual and how much the individual was liked. It was not clearly supported that stimulant medication usage had the same effect. Thus, it can be concluded that the symptoms of ADHD are more influential than being treated with stimulants for ADHD when considering negative perceptions against the disorder. More detailed discussion of individual hypotheses follows, as well as analysis of study limitations and suggestions for further research.

### **Hypothesis One: ADHD Behavior will be Perceived Negatively versus non-ADHD Behavior**

The data evidenced that depictions of ADHD behavior were perceived less positively than depictions of normative behavior. In terms of DFA, the control and MO conditions were rated higher than both the SO and SAM conditions. The same is largely true for DOL as well, as both the control and MO conditions were rated higher than the SAM condition, and control was rated better than SO. A discrepancy between the two measures was seen here, as DOL indicated that MO and SO were liked equally. However, analysis of Cohen's  $d$  showed that the effect size between the two conditions was approaching large ( $d = 0.73$ ). This suggests that perhaps the lack of difference between the two conditions could be due to a small sample size without enough power to show significant differences.

This evidence aligns with the current literature regarding perceptions of ADHD. Canu et al. (2008) noted a desire for social distance among those who read about individuals with ADHD, resulting in reluctance to form social bonds with affected individuals. This closely

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aligns with the current data, as participants who directly observed ADHD behavior consistently indicated less of a desire to affiliate with the person than those who did not. ADHD behaviors seem to result in a reduced chance that one will want to affiliate or form any type of bond with the affected individual. Further, research regarding perception of ADHD points to disordered behavior leading to more negative mood in the observer (Paulson et al., 2005). This negative mood could result in liking the observed person less, leading to the lower scores seen in the extent to which the observer likes the depicted person.

### **Hypothesis Two: PSMU will be Perceived Negatively versus no PMSU**

The data did not support that PSMU is perceived less positively than a lack thereof. In both DFA and DOL, there were no significant differences in ratings of conditions that mentioned medication and those that did not in the context of the same behavior. That is, there were no significant differences in ratings between conditions that did not depict ADHD behavior (control and MO), nor in those that did (SO and SAM). For both DFA and DOL, mentioning medication did not lower ratings significantly when comparing MO to control and SAM to SO.

This result is somewhat surprising since previous literature indicates that those who use psychiatric medications like antidepressants tend to be the targets of stigma (Casteldelli-Maia et al., 2011). However, perhaps the population sampled herein may be associated with fewer negative perceptions of PSMU. Specifically, there is a robust body of research that indicates stimulant medications are frequently abused in college populations by those that do not have ADHD. Rates vary, but research indicates that anywhere from 8.1% to as many as 43% of college students without ADHD have reported illicitly using stimulant medications to enhance academic performance, with average rates appearing to be 10-20% (McCabe, Teter, & Boyd, 2006; Advokat, Guidry, & Martino, 2008; Hall et al., 2005). Rates

## ADHD MEDICATION AND SYMPTOM PERCEPTION

of illicit stimulant usage have increased in the past years (Judson & Langdon, 2009), and even more than a decade ago a large proportion of students (approximately 44%) reported knowing someone who used stimulant medications without a prescription (Hall et al., 2005). In other words, there may be a kind of positive halo around stimulant medications because they are thought by college students to have a bolstering effect on GPA. This may possibly be associated with the greater acceptance of stimulant medication usage in this population (Judson & Langdon, 2009), despite its commonly known application in the treatment of individuals with ADHD.

### **Hypothesis Three: Depictions of Symptoms Alone will be Perceived More Negatively than Depictions of Medication Alone**

The data mostly confirmed this hypothesis. In terms of DFA, the condition that only mentioned medication (MO) was rated more positively than the condition that only displayed symptoms (SO). In terms of DOL, the ratings were not statistically significant. As previously mentioned, however, it is possible that the sample size did not contain enough power to indicate a significant difference, despite an effect size between the two groups that approaches the large range (see Table 3).

Considering the work of Masuch et al. (2018), it might be expected that symptoms alone would be more impactful to DOL than the mention of prescription medication use. The core symptoms of ADHD may appear to others as dislikable aspects of personality, such as irresponsibility and rudeness. Beyond stigma relating to the knowledge that one has a mental disorder, a person may be perceived as flawed intrinsically rather than struggling with symptoms. This may also contribute to the difference between MO and SO in terms of DFA: the person showing ADHD symptoms not only could be stigmatized due to their label, but also because their expression of symptoms leads the person to believe that they would not

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make a desirable employee, roommate, or friend. Since these areas of affiliation require continued interaction, an observer may want to distance themselves from the person to decrease their chances of being negatively affected by the traits the person exhibits.

Like in hypothesis two, this finding is perhaps also understandable in light of how common misuse of ADHD medication is among college students (Advokat et al., 2008). In a context in which ADHD medication is often used beyond its intended medical purpose there may be a neutral or even positive perception, as medication is used by non-stigmatized groups as well.

### **Hypothesis Four: Depictions Symptoms plus PSMU will be Most Negatively Perceived**

The data again provides partial support of this hypothesis. In both DFA and DOL, the control and MO conditions were rated higher than SAM. However, analyses of both conditions showed that ratings for the SO condition were not significantly different from the SAM conditions. It may be of note, though that for DFA the effect size between SO and SAM was approaching moderate, again pointing to the possibility that the small the sample size may mask a real difference between these groups (see Table 3).

These results were contrary to expectations and the existent literature. It was anticipated that a combination of stimulant medication usage and visible ADHD symptoms would combine to create increased stigma in the perceiver. Despite the lack of research regarding ADHD medication stigma, the certain knowledge that one is diagnosed with ADHD (due to stimulant prescription) was expected to worsen perceptions of the afflicted individual. Canu et al. (2008) found that even without the presence of visible symptoms, a label of having ADHD contributed to negative perceptions. Though the effect sizes in the study were medium, this still points to the idea that simply knowing one has ADHD could result in a somewhat less favorable view of that person, even when the appraiser does not

## ADHD MEDICATION AND SYMPTOM PERCEPTION

see their symptoms. In the videos, it was indicated that the actor was taking prescribed Adderall for treatment of their ADHD, effectively labeling them as having the disorder and demonstrating its effects through behavior. In the SO condition video, the actor mentioned that she had ADHD. However, it was at the very end of the video and was not discussed in great depth. It was expected that mentioning PSMU three times in the SAM condition video would increase the impact of the label, as the medication was mentioned in the first clip, reiterated in the middle, and the diagnosis was confirmed and the PSMU reinforced at the end.

Considering that the normative behavior groups (control and MO) were generally liked more and considered more desirable as potential associates, it may be that the mention of medication or label of having ADHD is not as significant contributor to negative perceptions or stigma as was anticipated, at least *if ADHD symptoms are visible and obvious*. In other words, a label may have some negative effects for stigma, but actually seeing the offputting symptoms of ADHD may trump any such effect. This result points to symptoms as the most important determinant of stigma, with medication mention playing a much less influential role.

### **Limitations and Future Directions**

There were several limitations of note in this research. Perhaps most significantly, the sample size was not large enough to show differences between groups that may have been present. With only 23 people in each condition, there was not enough statistical power to reveal the significance of several effects that approached moderate or even large size (see Table 3). In both DFA and DOL, the effect size of the differences between the SO and SAM conditions approached moderate, but the post-hoc Tukey tests did not have statistically significant results. This may help explain the lack of support for the fourth hypothesis –

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perhaps if the sample had been larger, the difference between perception of symptoms only versus perception of reinforced labels, medication, and symptoms would be more clear. This is also seen in DOL, where the effect size between the MO and SO groups approached large but showed no significant differences. Again, were the sample size larger, it is expected that there would be a significant difference between the two. In this case, there would be greater support for the second hypothesis, indicating that symptoms alone are more influential than medication alone, as was seen in DFA. In everyday life these effects could be observable by the average person, but the sample in this case was not large enough to support the trends.

Another limiting factor was that the Knowledge Quiz used to assess the participant's level of familiarity with ADHD concepts, was not adequately reliable, despite four doctorate-level ADHD researchers concurring on an answer key. As reliability is a necessary component of validity, the use of this measure as a true indicator of knowledge about ADHD is suspect. Several of the questions had debatable answers, and scores achieved may not have accurately reflected the participant's level of understanding regarding ADHD. However, this measure was adapted from the published literature, with a number of studies having relied on it. While it was not a robust measure, its lack of association with DFA and DOL may not entirely be a fluke here. In fact, preliminary analyses found no influence of having a close friend or relative with the disorder on ratings of DOL or DFA, which would result in greater knowledge about ADHD.

There were other measures-related issues, including the "attractiveness" question used as a possible control for biased opinions of the actor due to physical attraction. The question asked how *attracted* the participant was to the actor, whereas asking how *attractive* the actor was may have yielded a better index. People who are judged as more attractive tend to be viewed in a better light. Further, those judged more attractive tend to be considered

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more normative, which has been found to have a greater level of desirability than non-normative personalities or behaviors (Lorenzo, Biesanz, & Human, 2010). This occurs regardless of sexual orientation and indicates that one may consider someone to be less “different,” easier to like, and a more desirable person with which to affiliate, even if they are not sexually attracted to them. Future research may benefit from examining how perceptions of how generally attractive a target is could influence stigma, regardless of whether a person feels a personal (i.e., sexual) attraction.

The sample could also be considered limited, as the majority of participants were white, heterosexual, and female (see Table 1). Considering that women are typically more supportive of professional treatment for mental illness (Holzinger, Floris, Schomerus, & Carta, 2011), stigmatic beliefs may not have been as present in this study as it would be for a more balanced sample, particularly in regard to medication acceptability. In addition, the lack of diversity in the sample indicates that these results may not be generalizable to a larger population. Further, as mentioned above, there was a lack of satisfactory statistical power in the sample, which limited ability to detect some possibly-real effects. Future research would benefit from a larger, more varied population and a deeper investigation into the gender differences that could influence perceptions of mental illness.

In the same vein, future research could gain from investigating the impact of gender and race on perceptions of ADHD. The current study employs a White-appearing actress that generally acts similarly to mainstream women of her age. The same actress was used across video types to ensure that gender or race was not a confounding variable. Different stigmatic judgments might be made by research participants if the observed individual is a man, or non-gender conforming, or of a minority ethnicity. Future research would do well to explore these possibilities.

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The current study attempted to depict a wide range of potential ADHD symptoms by presenting the actor as having ADHD of the Combined presentation type. While this yields results that illustrate stigma relating to ADHD symptoms in general, it is worth investigating how different clusters of symptoms may have an impact on perception. Future research in this area could thereby investigate the differences in perception between observation targets that have the predominantly IA and HI presentations of ADHD, as well as the Combined presentation.

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Table 1.  
*Means (Standard Deviations): Descriptive Statistics*

---

Sex	
Male	17.4% ( <i>n</i> = 16)
Female	82.6% ( <i>n</i> = 76)
Age	19.61 (1.56)
Ethnicity	
White/Caucasian	90.2% ( <i>n</i> = 83)
Black/African American	6.5% ( <i>n</i> = 6)
Hispanic/Latino	3.3% ( <i>n</i> = 3)
Sexual Orientation	
Heterosexual	91.3% ( <i>n</i> = 84)
Homosexual	3.3% ( <i>n</i> = 3)
Multiple-gender attraction	5.4% ( <i>n</i> = 5)
Relatedness to ADHD	
Others	
Close friend/family with ADHD	71.6% ( <i>n</i> = 66)
Self	
Clinical diagnosis	10.9% ( <i>n</i> = 10)
Suspected diagnosis	3.3% ( <i>n</i> = 3)
Knowledge Quiz	14.73 (1.82)
Treatment Acceptability Questionnaire	52.09 (12.02)

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*Note.* Knowledge Quiz score given in terms of average total correct out of 20. Treatment Acceptability Questionnaire score given as average total out of 80.

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Table 2.

*Means (Standard Deviations), ANOVA Results, and Post-Hoc Analysis Results for Dependent Variables for Desire for Affiliation and Degree of Liking*

Variable	Descriptive Statistics				Analysis Results	
	1	2	3	4	<i>F</i>	Tukey
<b>DFA</b>	6.87 (1.79)	6.52 (1.15)	5.16 (1.62)	4.59 (1.60)	11.13	(1 = 2) > (3 = 4)
<b>DOL</b>	6.80 (1.63)	6.18 (1.35)	5.22 (1.29)	4.81 (1.56)	8.80	(1 = 2) (1 > 3 & 4) (2 = 3) (2 > 4) (3 = 4)

*Note.* For variables: 1 = control video condition, 2 = medication mention only video condition, 3 = symptom display only video condition, 4 = symptom display and medication mention condition. DFA = Desire for Affiliation, DOL = Degree of Liking. Both *F* values reached statistical significance (i.e., both were  $p < 0.001$ ).

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Table 3.

*Measures of Effect Sizes Between Groups for Desire for Affiliation (DFA) and Degree of Liking (DOL) as Measured by Cohen's d*

<b>DFA</b>				<b>DOL</b>			
<b>Video</b>	2	3	4	<b>Video</b>	2	3	4
1	0.24	1.0	1.35	1	0.42	1.08	1.25
2		0.24	1.0	2		0.73	0.94
3			0.35	3			0.29

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## Appendix A

## IRB Approval Letter

**To:** Mia Cave Psychology CAMPUS EMAIL

**From:** Dr. Andrew Shanely, IRB Chairperson

**Date:** December 19, 2018

**RE:** Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)

**STUDY #:** 19-0134

**STUDY TITLE:** Is it the Medication or the Symptoms? Examining Perceptions of ADHD in College Students.

**Submission Type:** Initial

**Expedited Category:** (7) Research on Group Characteristics or Behavior, or Surveys, Interviews, etc. **Approval Date:** 12/19/2018

**Expiration Date of Approval:** 12/18/2019

The Institutional Review Board (IRB) approved this study for the period indicated above. The IRB found that the research procedures meet the expedited category cited above. IRB approval is limited to the activities described in the IRB approved materials, and extends to the performance of the described activities in the sites identified in the IRB application. In accordance with this approval, IRB findings and approval conditions for the conduct of this research are listed below.

**Study Regulatory and other findings:**

The IRB determined that this study involves minimal risk to participants.

All approved documents for this study, including consent forms, can be accessed by logging into IRBIS. Use the following directions to access approved study documents.

1. Log into IRBIS
2. Click "Home" on the top toolbar
3. Click "My Studies" under the heading "All My Studies"
4. Click on the IRB number for the study you wish to access
5. Click on the reference ID for your submission
6. Click "Attachments" on the left-hand side toolbar
7. Click on the appropriate documents you wish to download

**Approval Conditions:**

Appalachian State University Policies: All individuals engaged in research with human participants are responsible for compliance with the University policies and procedures, and IRB determinations.

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**Principal Investigator Responsibilities:** The PI should review the IRB's list of PI responsibilities. The Principal Investigator (PI), or Faculty Advisor if the PI is a student, is ultimately responsible for ensuring the protection of research participants; conducting sound ethical research that complies with federal regulations, University policy and procedures; and maintaining study records.

**Modifications and Addendums:** IRB approval must be sought and obtained for any proposed modification or addendum (e.g., a change in procedure, personnel, study location, study instruments) to the IRB approved protocol, and informed consent form before changes may be implemented, unless changes are necessary to eliminate apparent immediate hazards to participants. Changes to eliminate apparent immediate hazards must be reported promptly to the IRB.

**Approval Expiration and Continuing Review:** The PI is responsible for requesting continuing review in a timely manner and receiving continuing approval for the duration of the research with human participants. Lapses in approval should be avoided to protect the welfare of enrolled participants. If approval expires, all research activities with human participants must cease.

**Prompt Reporting of Events:** Unanticipated Problems involving risks to participants or others; serious or continuing noncompliance with IRB requirements and determinations; and suspension or termination of IRB approval by an external entity, must be promptly reported to the IRB.

**Closing a study:** When research procedures with human subjects are completed, please log into our system at [https://appstate.myresearchonline.org/irb/index\\_auth.cfm](https://appstate.myresearchonline.org/irb/index_auth.cfm) and complete the Request for Closure of IRB review form.

### **Websites:**

1. PI responsibilities:

<http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/PI%20Responsibilities.pdf>

2. IRB forms: <http://researchprotections.appstate.edu/human-subjects/irb-forms>

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## Appendix B

## Informed Consent

**Informed Consent*****Social Appraisals in Different Contexts*****What is this study about?**

This study aims to investigate how people perceive and appraise others when asked to view them from various contexts. It explores how the same words and actions may be evaluated differently when the situation or point of view from which they are being observed is changed, e.g. during a job interview vs. a friendly chat.

**What will I be asked to do?**

You will be asked to watch a short video of a person answering general questions about themselves. You will then fill out questionnaires that examine: your appraisals of the person, your knowledge, opinions, and perceptions of certain topics, personality information about yourself, and your demographics and history.

**Is there any sensitive information required? How will my private information be kept confidential?**

The only sensitive information you will be asked to provide is your name and a small amount of medical history.

Your name will only be used to sign up and get credit through SONA, in the use of a study reminder email the day before your time slot, and on this informed consent form. The only physical record of your name, the informed consent, will be kept separately from the rest of your data and responses. Both will be kept in locked filing cabinets. All data entered into the online database used for analysis and storage will be tied only to your participant number.

Your medical history is self-report only, and will not have any identifiers tied to it. No information given will be able to be traced to you, nor can it incriminate you in any way.

**Do I meet the requirements for participation?**

If you are 18 or older, an undergraduate student, and are participating through SONA, you meet basic requirements. Since you will be watching a video that includes audio, having a physical disability that would severely interfere with the study administration or data collected (e.g. severe visual or auditory impairment) may prevent you from being able to participate.

**How long will this study take?**

The time slot is for one half hour (30 minutes). It is typically expected that the study will take less than the allotted time, but this cannot be guaranteed.

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### **What possible harms or discomforts may I experience during this study?**

No harms nor discomforts (physical, mental, or emotional) greater than those experienced in everyday life are expected to occur. If any should arise, please inform the research assistant.

### **What possible personal benefits are there to this study?**

You will not be paid for your participation in this study. However, you can earn 1 ELC credit for your participation. There are other research options and non-research options for obtaining extra credit or ELC's. One non-research option to receive 1 ELC is to read an article and write a 1-2 page paper summarizing the article and your reaction to the article. More information about this option can be found at: [psych.appstate.edu/research](http://psych.appstate.edu/research). You may also wish to consult your professor to see if other non-research options are available.

### **Whom should I contact with any questions I may have?**

The research assistant will answer any remaining questions to the best of their knowledge following the completion of study administration. Any other questions can be directed to the Principal Investigator, Jamie Cave, at [cavemj@appstate.edu](mailto:cavemj@appstate.edu). You may also contact the Faculty Advisor, Dr. Will Canu, at 828-262-2272 extension 412.

Questions regarding the protection of human subjects may be addressed to the IRB Administrator, Research Protections, Appalachian State University, Boone, NC 28608 (828) 262-2692, [irb@appstate.edu](mailto:irb@appstate.edu)

### **Do I have to participate?**

No! Your participation is entirely voluntary. You may cease to participate at any time, even if you have signed the Informed Consent form. Aside from not receiving full (if any) ELC credit, there will be no penalty and you will not lose any rights you would normally have.

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Printed Name

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Signature

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Date

## ADHD MEDICATION AND SYMPTOM PERCEPTION

## Appendix C

## Debriefing

*Social Appraisals in Different Contexts***Otherwise known as:**

*Is it the Medication or the Symptoms? Examining Perceptions of ADHD in College Students.*

Thank you for participating in this study! This form provides an explanation of what the study aimed to examine as well as why minor deception has been used. Please feel free to ask any questions or to comment on any aspect of the study.

You have been told that this study sought to examine how people appraise others differently when asked to view the target person from different points of view or in different contexts. While this is true, minor deception was used to conceal the more specific aim of the study.

In actuality, we were interested in the perceptions and stigma regarding ADHD in college students. More specifically, how the perception and/or stigma of ADHD is different when the observer is informed that the participant takes prescribed medication for ADHD (and subsequently knows that the person has been diagnosed) from when the observer only sees common symptoms of ADHD. Participants have all seen a video with the same actor and general responses to the questions, but the actor behaves differently in different conditions. Some participants saw a video that showed no symptoms of ADHD and did not mention medication usage, some saw one that only mentions medication usage (no symptoms), some saw one that only displays symptoms (no mention of medication), and some saw one that involved both. All participants completed the same questionnaire measures.

To protect the integrity of the research, and avoid demand characteristics and influenced responses, it was necessary to withhold this information.

As you know, your participation in this study is voluntary. If you so wish, you may withdraw after reading this debriefing form, at which point all records of your participation will be destroyed. You will not be penalized if you withdraw.

As you are likely not the last participant sampled, it is important that you do NOT discuss this study, particularly its true aims, with anyone. This includes verbally, over text, email, etc. This may bias future participants' responses and may severely compromise the accuracy of the data we collect. We hope you will support our research by keeping your knowledge of this study confidential.

Please return this copy of the debriefing form to the research assistant. A copy of the Informed Consent may be kept.

You may ask the research assistant any questions you may have or contact the Principal Investigator, Jamie Cave, at [cavemj@appstate.edu](mailto:cavemj@appstate.edu). You may also contact the Faculty Advisor, Dr. Will Canu, at 828-262-2722, extension 412.

Thank you again for your participation! The study has now ended.

## ADHD MEDICATION AND SYMPTOM PERCEPTION

## Appendix D

## Measures

**Appraisals of Observed Individual**

**Situation 1:** Imagine you are an employer looking to hire for an entry-level office job that requires both collaboration and independent projects.

1. Would you consider hiring this person? (Circle one)
  - a. Yes
  - b. No
2. How likely would you be to hire this person? (Circle one)
 

Not at all likely	0	1	2	3	4	5	6	7	8	9	Highly likely
	0	1	2	3	4	5	6	7	8	9	10

**Situation 2:** Imagine you are looking for a roommate. Please disregard gender preference and focus on personality.

1. Would you consider living with this person? (Circle one)
  - a. Yes
  - b. No
2. How likely would you be to agree to live with this person? (Circle one)
 

Not at all likely	0	1	2	3	4	5	6	7	8	9	Highly likely
	0	1	2	3	4	5	6	7	8	9	10

**Situation 3:** Imagine you have just met this person.

1. Would you consider becoming friends with this person? (Circle one)
  - a. Yes
  - b. No
2. How likely would you be to become friends with this person? (Circle one)
 

Not at all likely	0	1	2	3	4	5	6	7	8	9	Highly likely
	0	1	2	3	4	5	6	7	8	9	10

## ADHD MEDICATION AND SYMPTOM PERCEPTION

**Evaluation of Video**

1. How long did the video seem to you? (Circle one)

Too short											Too long
0	1	2	3	4	5	6	7	8	9	10	

2. To what extent were you physically attracted to the actor? (Circle one)

Not at all											Very much
0	1	2	3	4	5	6	7	8	9	10	

## ADHD MEDICATION AND SYMPTOM PERCEPTION

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*Please circle the number that corresponds to how much you agree or disagree.*

1. I think that this person and I may have a lot in common.

Strongly disagree												Strongly Agree
0	1	2	3	4	5	6	7	8	9	10		

2. There are aspects of this person's personality that I admire.

Strongly disagree												Strongly Agree
0	1	2	3	4	5	6	7	8	9	10		

3. I think that this person exhibits good judgment.

Strongly disagree												Strongly Agree
0	1	2	3	4	5	6	7	8	9	10		

4. I think that future interactions with this person would be pleasurable.

Strongly disagree												Strongly Agree
0	1	2	3	4	5	6	7	8	9	10		

5. I would like to get to know this person better.

Strongly disagree												Strongly Agree
0	1	2	3	4	5	6	7	8	9	10		



## ADHD MEDICATION AND SYMPTOM PERCEPTION

**Knowledge Quiz**

*Please circle the appropriate letter according to whether you think the following 20 statements are true or false. Please answer according to your knowledge of the disorder in general, rather than relating the questions to yourself.*

1. ADHD is a disorder present from childhood T F
2. ADHD is contagious . T F
3. People with ADHD find it difficult to follow rules. T F
4. ADHD symptoms can be treated with medication. T F
5. People with ADHD never fulfill their potential. T F
6. People with ADHD are distractible. T F
7. People with ADHD have difficulties concentrating. T F
8. People “grow out” of ADHD but the rate varies from person to person. T F
9. People with ADHD are less intelligent than the normal population. T F
10. Whether you have ADHD depends on how you were brought up. T F
11. More females than males have ADHD. T F
12. People with ADHD prefer short-term rewards over long-term rewards. T F
13. People with ADHD have difficulties with self-restraint. T F
14. ADHD is a lifelong condition. T F
15. People with ADHD become bored more easily than other people. T F
16. People with ADHD are likely to have additional psychological problems. T F
17. People with ADHD rarely get tired. T F
18. ADHD is a problem of motivation. T F
19. People with ADHD find it difficult to organize themselves. T F
20. People with ADHD are slow to understand instructions. T F

## ADHD MEDICATION AND SYMPTOM PERCEPTION

**Demographics and Background Information**

*Please remember that all of the information you provide is strictly confidential. No information will be shared with anyone else, cannot incriminate you, and will be disposed of following the termination of the study.*

1. Age: \_\_\_\_\_
2. Gender (circle one):
  - a. Male
  - b. Female
  - c. Nonbinary or non-gender conforming
3. Sexual orientation (circle one):
  - a. Heterosexual (“straight”)
  - b. Bisexual, pansexual, or other multiple-gender attraction
  - c. Gay or lesbian
  - d. Asexual
4. Ethnicity (circle one)
  - a. American Indian/Alaska Native
  - b. Asian
  - c. Native Hawaiian or Other Pacific Islander
  - d. Black or African American
  - e. White or Caucasian/European American
  - f. Hispanic/Latino
  - g. Multiracial
  - h. Unknown or other: \_\_\_\_\_
5. Have you been diagnosed with any psychological disorders or mental illness? If so, which ones?  
\_\_\_\_\_  
\_\_\_\_\_
6. Do you suspect you may have other psychological disorders or mental illness? If so, which ones?  
\_\_\_\_\_  
\_\_\_\_\_

## ADHD MEDICATION AND SYMPTOM PERCEPTION

7. Do you have any family or friends with ADHD? Please note their relationship to you

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8. Do you have any family or friends with another psychological disorder? If so, which disorders?

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9. Are you prescribed medication to treat ADHD? If so, indicate type, dosage, and frequency of use.

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10. Do you use medication that treats ADHD for which you do not have a prescription? If so, indicate type, dosage, and frequency of use.

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11. What is your year in college? (circle one)

- a. Freshman
- b. Sophomore
- c. Junior
- d. Senior
- e. "Supersenior," Fifth year, etc.

12. What is your major/minor (or intended major/minor)?

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13. What type of environment were you raised in?

- a. Rural
- b. Suburban
- c. Urban

14. What type of school did you attend?

- a. Public
- b. Private

## ADHD MEDICATION AND SYMPTOM PERCEPTION

15. What is your estimated cumulative college GPA?

\_\_\_\_\_

16. What was your high school GPA?

\_\_\_\_\_