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Developing a University-Wide Primary Prevention Intervention for Prescription Stimulant Misuse and Diversion in College Students

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The illicit or non-medical use of prescription stimulant medications on college campuses in the United States has risen considerably in the past decade (McCabe, West, Teter, & Boyd, 2014) and is a relatively new manifestation of problematic drug use among college students. Both stimulant misuse and diversion are more prevalent in college students than in any other population (Hall, Irwin, Bowman, Frankenberger, & Jewett, 2005; Teter, McCabe, LaGrange, Cranford, & Boyd, 2006; Wilens, Gignac, Swezey, Monuteaux, & Biederman, 2006). Stimulant misuse, defined as taking stimulants in a manner other than prescribed, has surged on college campuses, with estimated lifetime prevalence rates ranging from 5–55% (Advokat, Guidry, & Martino, 2008; Clegg-Kraynok, McBean, & Montgomery-Downs, 2011; Desantis, Noar, & Webb, 2009; Dupont, Coleman, Bucher, & Wilford, 2008; Dussault & Weyandt, 2013; Janusis & Weyandt, 2010; Low & Gendaszek, 2002; Rabiner et al., 2009), although prevalence estimates vary depending on ascertainment methods and time reference. Defined as giving, selling, or trading stimulants to others without a prescription, stimulant diversion prevalence rates on college campuses are also increasing, and estimates range from 2–29% (Poulin, 2007; Upadhyaya et al., 2005; Verdi, Weyandt, & Zavras, 2014; Wilens et al., 2006). Compared to both older and younger (e.g., high school) populations, college students are far more likely to misuse and divert stimulant medications (Bavarian, Flay, Ketcham, & Smit, 2013; McCabe, Teter, & Boyd, 2004; Stein, 2012; Weyandt et al., 2014; Wilens et al., 2008).

Prescription stimulants are quite easy to procure on college campuses for non-medical use and are perceived as benign "academic steroids," useful for enhancing academic performance (DeSantis, Webb, & Noar, 2008) and fighting fatigue/boosting stamina during study or partying sessions (DeSan-

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tis et al., 2008; Rabiner et al., 2009). Indeed, college students most often seek stimulant medications during academic "crunch" times (Advokat et al., 2008; DeSantis et al., 2008). Despite the perception of being an "academic steroid," illicit stimulant use among college students is actually associated with lower GPA, less time spent studying, and more frequent class-skipping (Arria et al., 2013), as well as with more frequent marijuana use (Desantis et al., 2009) and binge-drinking (Herman-Stahl, Krebs, Kroutil, & Heller, 2007), all factors that predict poor academic performance.

College students who misuse stimulants generally acquire them directly from peers or friends within their social network who have attention deficit/hyperactivity disorder (ADHD) and a stimulant medication prescription (Advokat et al., 2008; Boyd, McCabe, Cranford, & Young, 2007; DeSantis et al., 2008). Research consistently demonstrates that prescription medications originate from students currently being treated for ADHD who then divert their medications to peers and friends, often out of a sense of "helping out" (DeSantis et al., 2008), with up to 84% of students with ADHD and a prescription for a stimulant reporting that they have been approached to divert their medications (Advokat et al., 2008; Boyd et al., 2007). Thus, interventions aimed at preventing stimulant diversion on college campuses should subsequently lower stimulant misuse.

The misuse and diversion of prescription stimulant medications on college campuses is a clinically significant public health problem for several reasons. First, the soaring rates of stimulant misuse and diversion in this setting indicate inadequate management and monitoring of the delivery of stimulants to the population for whom prescription stimulants are most often intended—college students diagnosed with ADHD. Second, the easy accessibility creates several untoward effects, including (a) creating an illicit market for these substances on college campuses (Culpepper, 2013); (b) perpetuating procrastination and hindering development of important executive, goal-oriented behaviors such as planning, self-monitoring, time management, and organization (Arria et al., 2013; Peterkin, Crone, Sheridan, & Wise, 2011); (c) potentially leading to further stigmatization of those who seek ADHD treatment services (e.g., "drug-seeking"), similar to what has developed in the chronic pain field in the past 20 years (Spitz et al., 2011); and (d) further marginalizing ADHD, a psychiatric disorder that already elicits much public skepticism (Mueller, Fuermaier, Koerts, & Tucha, 2012). Finally, the use of prescription stimulants can lead to substance dependence as well as inducing a dangerously high core body temperature, cardiovascular events, seizures, paranoia, insomnia, and even sudden death (Duong, Chung, & Wigal, 2012); since illicit use is clearly unmonitored by healthcare providers, these risks are magnified and thus more potentially hazardous.

Given all of the above, rather surprisingly, there are very few data that have been published on intervention efforts to manage stimulant misuse. At this time, no interventions have been tested to address the problem of stimulant diversion. Theory-informed intervention efforts are sorely needed to help lessen the flow of prescription stimulant medications from licit users to illicit users on college campuses. Below, we detail an intervention effort that we are currently developing and piloting at Syracuse University. Before describing our proposed intervention, we first review existing interventions for prevention of substance use disorders in college students, including the one existing study on stimulant misuse.

EXISTING INTERVENTIONS FOR THE MISUSE OF STIMULANT MEDICATION

The literature on existing intervention strategies for the misuse of prescription stimulants is sparse. To date, only one study has directly addressed misuse with a randomized, controlled trial targeting at-risk college students (Looby, De Young, & Earleywine, 2013). In this study, 96 stimulant-naïve college students who endorsed at least two risk factors associated with stimulant misuse (e.g., low GPA, Greek involvement, one episode of past two-week binge drinking, or any past-month cannabis use) were recruited to participate in a

study, including two laboratory visits and an online follow-up at 6 months. Participants (60% male, *M* Age = 19.6, *SD* = 1.26) were randomized into an expectancy challenge (EC) intervention condition (n = 47) or an assessment-only control (n = 49). On one visit, participants received no medications, but completed questionnaires and cognitive tasks. On the second visit, prior to completing cognitive tasks, participants in the intervention group received what they believed to be methylphenidate (MPH) but was actually a placebo. The 30-minute EC was administered on the second visit for the intervention group and consisted of a debriefing on the placebo administration, a discussion on cognitive enhancement expectancies related to the placebo administration, and a didactic lecture on expectancy effects, as well as education about the potential negative consequences of prescription stimulant misuse. The researchers then reviewed each participant's self-reported subjective arousal and cognitive performance under each condition (i.e., placebo MPH vs. no medication) in an effort to "allow each participant to realize that difference in mood or cognition could only be due to their expectations, since no active drug was ingested" (Looby et al., 2013, p. 364). Control participants completed questionnaires on prescription stimulant expectancies on both study visits, but did not receive didactic information on expectancy effects. At 6-month follow-up, all participants were contacted by email and asked to complete a web survey regarding prescription stimulant misuse since the initial laboratory visits and were fully debriefed.

Results from the study indicate that the intervention weakened positive cognitive enhancement expectancies immediately following the EC, but this was not maintained at 6-month follow-up. Further, initiation of prescription stimulant misuse was equivalent between the EC and control groups: Nine participants in each group (19% of the total sample) reported initiation of non-medical use of prescription stimulants by follow-up. Notably, nearly all individuals (17/18) who reported non-medical use attributed their use to cognitive enhancement and study assistance motivations. Nearly all participants reported that cognitive enhancement was the primary motivation for use, the exact expectancy that the intervention was designed to reduce. Given the inherent increased exposure to discussion and focus on prescription stimulants (i.e., a 45-item positive and negative prescription stimulant expectancy questionnaire was administered three times to both control and intervention participants), it cannot be ruled out that this increased exposure to positive statements about stimulant expectancies (e.g., "I can study/work for hours"; "My concentration is excellent"; "Distractions disappear"; etc.) may have reinforced the belief that illicit use of prescription stimulants may be efficacious. Thus, while this intervention has a number of strengths (e.g., the first foray into prevention of prescription stimulant misuse, prospective, balanced-placebo RCT design), the ultimate goal of producing an effect attributable to the intervention was unsuccessful. Thus, the need for efficacious stimulant misuse interventions remains currently unmet.

The existing literature on interventions targeting stimulant misuse provides little guidance as to what would be an effective approach to tackle stimulant misuse and diversion. Thus, to help guide our outline for intervention strategies, we reviewed the existing data on interventions designed to reduce substance use more generally in college students. This remains relevant for prescription stimulant misuse since students that misuse prescription medications are also likely to have problems related to other substances (Arria et al., 2013). The following section details the work carried out by other research groups to reduce or prevent risky or illicit substance use in college students.

EXISTING INTERVENTION STRATEGIES DEPLOYED TO REDUCE SUBSTANCE USE IN COLLEGE STUDENTS

Uncontrolled Studies

Primary prevention/intervention strategies that primarily focus on delivering broad, didactic information (i.e., distributing flyers and brochures, educational presentations, alcohol-free activities) have yielded mixed results in reducing drug misuse and related harm (Dennhardt & Murphy, 2013). One large uncontrolled, federally funded program (Fund for the Improvement of Postsecondary Education, FIPSE; n = 41,567) across 36 states and 188 colleges showed subsequent *increases* in marijuana and cocaine use following implementation of FIPSE programming, even after adjusting for temporal alcohol or drug trends (Licciardone, 2003). Although the FIPSE programming varied across institutions, the most commonly reported elements included: 1) development and distribution of flyers and brochures (95%); 2) other literature dissemination (90%); and 3) other educational presentations (87%). Thus, prevention and intervention programs that primarily use an informational or didactic approach to reducing drug use may have negligible or even negative effects.

On the other hand, research using the Brief Alcohol Screen and Intervention in College Students (BASICS) program, which combines personalized feedback and motivational interviewing (MI) techniques and principles, has shown promise (Amaro et al., 2010; Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001; B. Borsari & Carey, 2005; Ehrlich, Haque, Swisher-McClure, & Helmkamp, 2006). For example, Amaro and colleagues (2010) demonstrated that the BASICS program was feasible and effective in reducing alcohol or drug use and related harm in the context of a nurse-delivered, clinical psychologist–supervised intervention at a university-based health clinic. At 6-month follow-up, college students reported decreases in the quantity and frequency of weekly heavy episodic drinking (67% to 50%), decreases in alcohol or drug use–related distress and consequences, and reductions in illicit drug and prescription drug use. Beneficial effects were larger for those who had higher alcohol and drug use at baseline (Amaro et al., 2010).

While none of the above-mentioned BASICS programming interventions included a randomized or controlled research design or assessed the mecha-

nisms of change, the component elements of BASICS (motivational interviewing and personalized feedback) have been shown to be efficacious in the randomized controlled trials (RCT) described below.

Controlled Studies

McCambridge and Strang (2004) conducted a multisite cluster randomized trial to test the efficacy of a single-session of MI intervention (1 hour, face-to-face, n = 105) against an education-as-usual control (n = 95). The study participants were a group of ethnically diverse students (age range 16–20 years) reporting illicit drug use (cannabis or stimulants) within the past 3 months and enrolled in one of several colleges in inner London. At baseline, all participants were required to provide a hair sample for "biochemical validation" to encourage accurate and reliable reporting of consumption data (although the hair sample was not subsequently used for any purpose). At 3 months, 92% of the intervention recipients and 85% of control recipients were retained for follow-up interviews.

At the 3-month follow-up, the MI group showed reductions in illicit drug use. Mean weekly cannabis use declined 66%, mean weekly alcohol consumption declined 39%, and mean weekly cigarette smoking declined 21%. The authors did not report on stimulant use outcomes. The education-as-usual control group showed a 27% increase in mean weekly cannabis use, a 12% increase in mean weekly alcohol consumption, and a 12% increase in mean weekly cigarette smoking. Further, reductions in illicit drug use were larger for those at higher risk (higher levels of use at baseline, more psychosocial vulnerability) (McCambridge & Strang, 2004). Thus, a single-session MI intervention has been demonstrated to be clinically efficacious in reducing illicit drug use in college students.

In another RCT (Fleming et al., 2010), an MI–informed brief intervention (BI, n = 493) consisting of two 15-minute counseling visits in university-based primary care and two follow-up phone calls was tested against a usual-care control (n = 493) across five university health clinics in the United States and Canada. The study participants were college students (M Age = 21) who screened positive for high-risk drinking behaviors. The intervention was delivered in a university health primary care setting primarily by physicians (91%). Students randomized to the usual-care control group received a health pamphlet on general health issues and participated in the baseline interview as well as follow-up calls at 6 and 12 months. Students randomized to the intervention group received the pamphlet as well but were also scheduled to see a primary care clinician for the BI, as well as follow-up calls at 6 and 12 months.

At follow-up, results showed that the BI group reduced their past-month mean number of drinks by 27%. Surprisingly, the usual-care control group also reduced their past-month mean number of drinks (21% reduction). Several explanations were offered for the reduction in the no-treatment, usual-care control group, including regression to the mean, the potential confounds of the Hawthorne effect, and naturalistic history changes over the academic year in college student drinking patterns (Fleming et al., 2010). These results suggest that physician-delivered brief interventions may lead to decreased alcohol consumption. On the other hand, the results also suggest that "usual-care," conceptualized in this study as being interviewed by a member of a healthcare staff, receiving a health-related pamphlet during a visit to the health center, and being followed up twice over the telephone, may have similar effects.

In a separate RCT, personalized mailed feedback (n = 737) was tested against an assessment-only control (n = 751) (Larimer et al., 2007). After completing an initial assessment, college students in the intervention group were mailed a feedback form with personalized feedback based on their assessment results; then, within two weeks, students in the intervention group received the first of ten weekly generic postcards with additional didactic information on alcohol's effects, costs, consequences, and suggestions for protective strategies to use when drinking. Students in the assessment-only control group did not receive these weekly postcards. All students were followed up at one year post-intervention, and the results were modest. Drinking actually increased in frequency for both groups. However, personalized feedback had a preventive effect on drinking overall: Feedback was associated with a smaller increase in drinking compared to assessment-only (Larimer et al., 2007). Since this intervention was designed to target the general student population rather than high-risk students exclusively, this finding may be unsurprising.

Web-Based Approaches

Hustad and colleagues (Hustad, Barnett, Borsari, & Jackson, 2010) conducted an Internet-based alcohol prevention RCT for incoming first-year college students (n = 82) comparing two web-based electronic interventions (e-interventions) against an assessment-only control and followed students up at 1-month post-intervention. The two e-interventions were: (1) e-CHUG, a 20-minute program including personalized normative feedback, educational materials regarding alcohol use and consequences, three short 3-minute videos, and a list of tips for safer drinking strategies; and (2) AlcoholEdu, a three-hour educational program combining streaming video, text-based information, and interactive web sites. Results revealed a substantial difference between the e-intervention groups and the assessment-only control across several markers of alcohol use. For example, at baseline, students across all groups reported nearly equivalent levels of peak drinks per drinking occasion in the past month: assessment-only control (M = 4.63, SD = 4.52); e-CHUG = (M = 4.87, SD = 5.28); AlcoholEdu (M = 4.35, SD = 4.36). However, at follow-up, the assessment-only control group nearly doubled their peak number of drinks (M = 8.13, SD = 6.65), while the e-Chug and AlcoholEdu groups showed stable levels (M = 5.27, SD = 4.94 and M = 4.31, SD = 4.06, respectively). These results suggest that an Internet-based approach delivered to college freshman may be efficacious at limiting an increase in drinking.

e-CHUG has also been evaluated in a primary prevention study targeting college freshman during university orientation (Doumas, Nelson, DeYoung, & Renteria, 2014). One orientation section was designated as the e-CHUG intervention group (n = 167), while another was designed as the assessment-only control (n = 183). The study authors chose to operationalize alcohol-related consequences, the outcome measure, as number of sanctions received for campus alcohol policy violations. Thus, the study did not rely solely on the self-report of college students to ascertain outcomes. Overall, students in the assessment-only control group received a higher number overall of alcohol-related sanctions (n = 8/183) from the university compared to the e-CHUG intervention group (n = 3/167). However, these results may be skewed and somewhat spurious, because the number of students who receive sanctions for violating campus alcohol policies is much smaller than the number of students who violate alcohol policies, but are not reprimanded. To apply this to the issue of stimulant misuse and diversion, we are unaware of any specific sanctions or legal consequences associated with the misuse of prescription stimulant medications on college campuses.

Summary of Existing Intervention Strategies Deployed to Reduce Substance Use in College Students

Primary prevention/intervention strategies that primarily focus on delivering broad, didactic information (i.e., distributing flyers and brochures, educational presentations, alcohol-free activities) have not proven effective with college students. The Brief Alcohol Screen and Intervention in College Students (BASICS) program, which combines personalized feedback and MI techniques and principles, has shown promise with college students. Further, several web-based interventions have been demonstrated to be effective in keeping alcohol consumption from increasing in college freshman. Given the many strengths of web-based prevention/intervention approaches—ease of administration, relatively low-cost/low resource allocation, ease of dissemination, and growing empirical support—it is surprising that more web-based approaches have not been tested for other substances on college campuses, such as the issue of stimulant misuse and diversion. Thus, our research group hopes to begin to fill this void by outlining future directions to address this emergent issue in our field.

OUTLINE OF INTERVENTION STRATEGIES FOR PRESCRIPTION STIMULANT MISUSE IN COLLEGE STUDENTS

Below, we outline the strategies we are currently developing and piloting at Syracuse University. This primary prevention intervention will be based on MI concepts and principles and delivered to freshmen during a freshmen orientation program.

Peer Interventionists

The role of peers is especially prominent in adolescence, and peers are involved in the initiation, progression, and maintenance of substance use (Andrews, Tildesley, Hops, & Li, 2002). Moreover, the link between peer networks supportive of substance use and increased substance use among college students is a particularly strong and well replicated finding (Bartholow, Sher, & Krull, 2003; Borsari & Carey, 1999).

While none of the above reviewed primary prevention studies in college students relied on peer interventionists, several previous intervention studies targeting alcohol use in college students have utilized trained peer interventionists, with high reported acceptability and feasibility (Mastroleo, Mallett, Ray, & Turrisi, 2008) and efficacy comparable to professional substance abuse counselors (Fromme & Corbin, 2004; Larimer et al., 2001). Likewise, others in the adolescent substance use disorder prevention literature have employed peer interventionists, with reported positive results (Botvin, Baker, Dusenbury, Tortu, & Botvin, 1990; Kviz, Crittenden, Madura, & Warnecke, 1994; Larimer et al., 2001). Finally, previous meta-analytic research has indicated that mental health clinicians and peers are both more effective than teachers or other faculty in delivering school-wide primary prevention programs (Tobler et al., 2000). All of the above suggests that the use of a trained peer interventionist (college junior or senior) may be a fruitful and feasible intervention approach. The older college student interventionists will themselves need to not have stimulant misuse or substance use disorder histories to avoid social contagion/iatrogenic effects (Dishion, McCord, & Poulin, 1999). Our approach will be to train the older peer interventionists in MI principles and techniques and the intervention content during the summer before the freshman orientation program.

Social Media- and Web-Based Intervention Components

For a primary intervention strategy to be effective and deliverable, it must be brief, low-cost, and easy to disseminate. Direct-mail interventions satisfy those requirements yet have only produced modest results across several studies addressing alcohol use in college students (Collins, Carey, & Sliwinski, 2002; Larimer et al., 2007). In these interventions, the researchers had little leverage in manipulating the degree to which participants engage with the mailed materials. Since an estimated 72% of college students use smartphones (Interactive, 2013), using mobile devices to both gather data and deliver interventions is a critical and novel intervention step forward. To date, substance use prevention efforts have used web-based applications (Moore, Fazzino, Garnet, Cutter, & Barry, 2011) yet have not embraced online social media platforms as a way to deliver interventions to entire social networks.

Similar to what others (Brown et al., 2014; McNab & Dolan, 2014) have recently accomplished, mobile applications (apps) with the ability to crowd-source data collection should be developed and piloted. Rather than inviting participants to the clinic or laboratory, apps can be made available for free. Checklists, questionnaires, and study information could then be collected remotely and confidentially for the study participants. In addition to the social media component, developing a web-based intervention component

with built-in real-time assessment and feedback (e.g., students must answer multiple-choice questions correctly to proceed to the next module of the intervention) is an important next step. This type of web-based intervention can then be used in conjunction with an in-person delivery in the context of a freshman orientation class, in order to reinforce the skills and information that were covered in the in-person intervention.

Prescribing Physicians

College students who misuse stimulants generally acquire them directly from peers or friends within their social network who have ADHD and a stimulant medication prescription (Advokat et al., 2008; Boyd et al., 2007; DeSantis et al., 2008). Up to 84% of students with ADHD and a prescription for a stimulant report that they have been approached to divert their medications (Advokat et al., 2008; Boyd et al., 2007). Likewise, a recent review (Ibrahim & Donyai, 2014) suggested that 25–70% of parents of children with ADHD use "drug holidays" with their children. Thus, college students with ADHD are likely to have been socialized to not take their stimulant medication every day.

Despite this clinical reality, to our knowledge, no data have been published on the percentage of days that college students with ADHD take their stimulant medication. It is conceivable that the illicit stimulants that are misused by other college students represent "extra" unused medication that is available for distribution. To further understand this phenomenon, researchers should determine how often college students with ADHD take their stimulant medications. These data should then be disseminated to prescribing physicians who may (or may not) adjust their prescribing practices. Many physicians are aware of the methods for reducing stimulant misuse/diversion on college campuses (e.g., long-acting formulations, screening for comorbid substance use disorders as a risk factor for misuse/diversion, etc.) (Manning, 2013), but it is unclear how and whether they apply this knowledge. One arm of our primary intervention strategy will be to collect these data from college students with ADHD and share them with prescribing physicians in our university-based health center.

Addressing the Primary Motivation for Misusing Stimulants

The reasons college students cite for using stimulants (performance enhancement) are very different than the reasons for using alcohol (achieve a high, reduce negative affect) (Kuntsche, Knibbe, Gmel, & Engels, 2005), Therefore, a treatment component related to improving academic preparatory skills in order to address the apparent lack of academic confidence or self-efficacy seems germane. Based on the previous literature as well as the primary reasons that college students misuse stimulants, we hypothesize that a combination of MI/personalized feedback/brief psychoeducation, and academic preparatory skills will be the most effective intervention for reducing the risk of stimulant misuse.

We encourage the inclusion of an academic preparatory skills intervention based on both the data suggesting that academic "performance enhancement" is the primary reason that students misuse stimulants (DeSantis et al., 2008) and the finding that students with low GPAs are more likely to consider stimulant misuse as a compensatory strategy (Looby et al., 2013). Given that (a) data suggest that those with higher levels of ADHD symptoms (yet not an ADHD diagnosis) are more likely to misuse stimulants (Hartung et al., 2013; Peterkin et al., 2011) and (b) cognitive behavioral therapy (CBT) interventions for adult ADHD often target executive functioning impairment (Safren, Perlman, Sprich, & Otto, 2005; Solanto et al., 2010), it seems judicious to incorporate the use of existing CBT manuals, with a focus on modules that are specific to academic impairments (e.g., planning, organizing, improving memory), as part of the academic preparatory skills intervention.

CONCLUSIONS

The illicit or non-medical use of prescription stimulant medications on college campuses in the United States is an emerging manifestation of problematic drug use among college students and represents a considerable public health problem. While ample descriptive data have been published, the one existing intervention with a focus on prescription stimulants (Looby et al., 2013; Tait et al., 2014) reported modest and mixed results. Thus, efforts to intervene for this rapidly growing public health problem are sorely needed.

In this article, we have detailed several theory-guided intervention strategies that are brief, low-cost, and can be delivered in both university-based primary care (diversion) and freshman-orientation settings (misuse). The university-based primary care intervention will also rely on the prescribing physician potentially altering his/her prescribing practices for stimulants, an intervention that has not yet been tested empirically. We are following the stepwise model proposed by others in the substance use disorder field (Carroll & Onken, 2005; Marcus et al., 2007; Rounsaville & Carroll, 2001) to achieve the ultimate goal of completing randomized controlled clinical trials for stimulant misuse and diversion. We hope to report back in several years on the feasibility and efficacy of these proposed interventions for managing this significant public health problem.

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Teacher-to-Teacher Consultation: Facilitating Consistent School Support Across Grade Levels

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Students with ADHD often experience significant impairments in behavioral control, academic achievement, and social relationships within the school environment (Barkley, 2015; DuPaul & Stoner, 2014). Further, the majority of children will continue to demonstrate impairment over time, with up to 80% continuing to meet diagnostic criteria through adolescence. (Owens, Cardoos, & Hinshaw, 2014). Although there are many studies demonstrating the efficacy of psychostimulant medication either alone or in combination with behavioral interventions (e.g., Fabiano et al., 2007; Hechtman et al., 2004; MTA Cooperative Group, 1999), school professionals are prohibited from mandating medication for school attendance, formal evaluation, or receipt of special education services (IDEA, 2004). In addition, parents rate treatments with behavioral components more favorably (Pelham, Fabiano, Gnagy, Greiner, & Hoza, 2004). For these reasons, school-based professionals must be prepared to implement behavioral interventions with or without pharmacological treatments.

Within the school setting, teachers typically deliver behavioral interventions to the students in consultation with a school psychologist. As such, behavioral interventions must not only meet the needs of the student, but also must be palatable to the teacher. Factors such as the teacher's understanding of the intervention plan, the ease of implementation, the match of the intervention to the teacher's teaching style, teacher motivation to implement the plan, and the use of performance feedback all impact implementation integrity and quality (Klinger, Ahwee, Pilonieta, & Menendez, 2003; Witt, Noell, LaFleur, & Mortenson, 1997). The behavioral consultation method addresses both student and teacher needs in the context of a successful school-based intervention by creating a collaborative partnership between the consultee (teacher) and consultant (school psychologist) to identify and intervene upon child-centered academic, behavioral, or social needs. The consultation process involves four stages—1) problem identification, 2) problem analysis, 3) plan implementation, and 4) problem evaluation (Kratochwill & Bergan, 1990)—and has been found effective for the school-based impairments associated with ADHD (Kratochwill & Stoiber, 2000; Murray, Rabiner, Schulte & Newitt, 2008; Sheridan & Kratochwill, 2008).

Despite the documented success of behavioral interventions for students with ADHD, research has shown that treatment gains often regress to baseline levels following the removal of intervention (MTA Cooperative Group, 2004; Shelton et al., 2000). Unfortunately, no studies have specifically addressed the continuation of the intervention following a grade-level transition (e.g., from 2nd to 3rd grade). Continuing an intervention across these types of transitions has a number of advantages. First, the student is provided an effective, familiar intervention beginning the first day of a new school year. Similarly, the student's new teacher is provided with an established intervention with documented success from day one. Finally, continuing the same intervention may lead to continued behavioral improvement over extended periods of time.

TEACHER-TO-TEACHER CONSULTATION (TTC)

One potentially effective method to facilitate consistent and effective intervention across grade level transitions for students with ADHD is teacher-to-teacher consultation (TTC; Gormley & DuPaul, 2015). Inspired by the conjoint behavioral consultation (CBC) model, the TTC procedure utilizes a joint meeting between the student's previous teacher, current teacher, and consultant early in the new school year to continue an intervention created using behavioral consultation. The TTC meeting allows the student's previous teacher to share the challenges and suc-

cesses implementing the intervention during the previous year. Additionally, the student's new teacher is able to ask questions regarding practical concerns surrounding intervention implementation (e.g., time commitments), discuss concerns about the intervention (e.g., match of the existing intervention to his/her teaching style), and have a chance to make any necessary modification to the program prior to the student arriving in the classroom. Importantly, the TTC meeting also marks the start of a collaborative relationship between the student's new teacher and the existing consultant.

As previously mentioned, the process of the TTC meeting is taken from the CBC model of consultation. Although the CBC model is generally intended to create interventions spanning different settings (e.g., school and home) simultaneously, the process of establishing an intervention in two different settings is applicable to transferring supports across school years. Specifically, the Conjoint Needs Identification Interview (CNII) and Conjoint Needs Analysis Interview (CNIA) (Sheridan & Kratochwill, 2008) were combined and modified to facilitate the transfer of the intervention between teachers. In general, the TTC meeting follows the CNII (i.e., Social Opening; Open Up Dialogue; Discuss Child and Teacher Strengths; Discuss Goals and Desires; Select Needs; Select/Define the Priority; and Select a Focus/Setting). Next, two sections from the CNAI are completed (i.e., What Is Happening; Why Is It Happening?) followed by a combined section (What Works/What Doesn't/What to Do Now). The final three sections (Collect Information; Meet Again; and Closing) of the TTC interview are taken from the CNII (see Sheridan & Kratochwill, 2008). Following the TTC meeting, the consultant and new teacher continue to meet in accordance with the problem evaluation stage of the behavioral consultation model as described in Kratochwill and Bergan (1990; see Table 1).

Pilot Study

We recently conducted a small pilot investigation of TTC for three elementary students meeting criteria for ADHD using an AB multiple baseline across participants, multiple probe design (Gormley & DuPaul, 2015). A general overview will be followed by a specific case example. Each student had a different target behavior (e.g., talking during math class, off-task behavior during independent reading), and therefore outcome data were collected using a more general measure of student behavior, the Behavioral Observation of Students in Schools (BOSS; Shapiro, 2004). To simplify interpretation, the three off-task categories on the BOSS (motor, verbal, passive) were collapsed into a single off-task variable. Similarly, the two on-task categories, active engagement and passive engagement, were combined into a single on-task variable.

In each case, interventions developed through behavioral consultation led to increases in on-task behavior and decreases in off-task behavior for each student during the first year of the study. Following the summer break, a TTC meeting was held within the first month of the new school year for each student. Each student's on-task and off-task behavior remained consistent with the intervention levels from the previous year. Finally, teachers and students found the consultants, consultation procedures, and interventions to be moderately to highly acceptable, suggesting that the procedure is feasible in the school setting.

Josh

Josh was a 6-year-old Hispanic male in the first grade in a public elementary school in eastern Pennsylvania. Initial screening using a combination of parent and teacher rating scales, in addition to a semi-structured interview with the parent, indicated that Josh met criteria for ADHD combined presentation and conduct disorder. At the time of his referral to the project, Josh's teacher was already using a behavioral intervention to help him in the classroom; however, she reported that Josh still exhibited frequent off-task motor behavior during math class.

During baseline data collection, it appeared that Josh's existing behavior plan was adequately controlling his behavior in this setting. His teacher requested that we focus on his behavior during independent reading. A functional assessment observation (O'Neill et al., 1997) was completed and indicated that Josh's off-task behavior was primarily maintained by escape from a non-preferred activity (i.e., reading). Through consultation, Josh's teacher indicated that although we were focusing on independent reading, she needed a system for the entire school day. His teacher selected two targets for the intervention: 1) remaining in the work area (i.e., sitting or standing within two feet of his desk) and 2) working appropriately (i.e., silently or quietly). Therefore, a plan was created in which Josh would receive a check mark each time his teacher needed to redirect him back on-task. Josh would earn a sticker if he received five or fewer tallies per academic period. Josh earned a home-based reward (e.g., additional time on his Nintendo DS) if he earned 75% of his stickers that day. Results demonstrated that Josh immediately responded to the plan, with rates of academic engaged time rising from about 50% to about 80% of intervals. Similarly, off-task time decreased from 56% to 35% of intervals.

The TTC meeting occurred in mid-September to allow Josh's teacher to get settled into the new school year. Throughout the course of the meeting, his second grade teacher indicated that she was seeing many of the same behaviors he had exhibited during first grade. She agreed that the intervention created last year would translate reasonably well into her system of teaching, but she had some concerns. Specifically, she wanted to modify the expectations to specify that Josh remain seated at his desk. Through the TTC procedure, she concluded that this expectation was beyond Josh's current level and would be a more distal goal. At the end of the meeting, Josh's new teacher felt comfortable with the intervention plan as it was originally designed in first grade and was eager to put the system into place.

Second year data collection was somewhat variable due to three abnormal observations. During one session, the class was engaged in a craft that led