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Follow-Up of Young Adults With ADHD in the MTA: Design and Methods for Qualitative Interviews

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Abstract

Objective: Qualitative interviews with 183 young adults (YA) in the follow-up of the Multimodal Treatment Study of Children With and Without ADHD (MTA) provide rich information on beliefs and expectations regarding ADHD, life's turning points, medication use, and substance use (SU). **Method:** Participants from four MTA sites were sampled to include those with persistent and atypically high SU, and a local normative comparison group (LNCG). Respondents were encouraged to "tell their story" about their lives, using a semistructured conversational interview format. **Results:** Interviews were reliably coded for interview topics. ADHD youth more often desisted from SU because of seeing others going down wrong paths due to SU. Narratives revealed very diverse accounts and explanations for SU-ADHD influences. **Conclusion:** Qualitative methods captured the perspectives of YAs regarding using substances. This information is essential for improving resilience models in drug prevention and treatment programs and for treatment development for this at-risk population. *(J. of Att. Dis. XXXX; XX(X) XX-XX)*

Keywords

ADHD, MTA study, substance use, qualitative research, mixed methods

Introduction

Research on ADHD-related risk for substance use disorders (SUD) has relied primarily on clinical interviews, *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*)–based mental health assessments, paper-and-pencil questionnaires about mediators and moderators, and studies testing biological mechanisms (neuroimaging and genetics). Combining quantitative and qualitative methods allows for examination of specific malleable factors that contribute to substance use (SU) onset, persistence, or desistence; changes in clinical course; and ultimate outcomes. Qualitative methods incorporating the beliefs and accounts of young adults (YAs) themselves can discover important setting and context-level influences for those with a variety of mental illnesses, capture the experiences and perspectives of the YAs, and identify triggers or turning points that often are missed in questionnaires (Capps & Ochs, 1995; Kleinman, 1988; Ochs & Capps, 1996; Weisner, 2002). Discovery of such patterns can lead to hypotheses that then can be tested using other methods.

Individual trajectories of SUD development among youth with ADHD have not been carefully examined. The role of key "turning points" during challenging developmental transitions (e.g., changes in life course related to cognitive, behavioral, or social-emotional events during adolescence and young adulthood) is not well understood. In this report, we describe qualitative interviews with 183 YAs participating in the 14- and 16-year follow-up of the Multimodal Treatment Study of ADHD (MTA).

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A recent comprehensive review of ADHD and SUD (Molina & Pelham, 2014) concludes, "Beliefs about the effects of alcohol and other drugs (expectancies) have received minimal research attention in the ADHD literature despite their well-documented contribution to alcohol use disorder" (p. 629). Qualitative methods can improve understanding of how and why YAs decide to start, persist, or cease using substances, as they describe these processes from their point of view, and what these behavior changes mean for them. This is essential for improving resilience models in drug prevention and treatment programs (Johnston, O'Malley, & Bachman, 1999; Masten, Faden, Zucker, & Spear, 2008).

Qualitative and quantitative evidence show associations between ADHD and the Western social and cultural expectations for desiring more goods and experiences (Whybrow, 2006); the increased expectation of more intense, engaged, 24/7 work and activity (Martin, 2007); intentional work choices that have a better fit with behavioral, cognitive, and emotional tendencies in young adulthood (Lasky et al., 2016); and changing cultural conceptions of conditions like ADHD or mania and their degree of "fit" with our economy and social values (Whybrow, 2006).

Integrating qualitative and quantitative data is important for developing interventions (Weisner, 2014; Weisner & Duncan, 2014). For example, youth beliefs regarding connections between SUD and ADHD medication are not well understood, though it is clear that YA, parents, and peers often have strong beliefs about connections (or lack thereof) between ADHD medication and SUD. The importance of further understanding these beliefs is highlighted by Molina and Pelham (2014):

> Stimulant medication . . ., despite its well-documented acute effects on ADHD symptoms and impairment, has failed to demonstrate protective effects against substance use and disorder, as it has failed to demonstrate beneficial long-term effects in all of the key domains that mediate the development of SUD. (p. 629)

It is critical to understand the reasons that many YAs with ADHD who experience multiple risks do *not* develop SU problems; this may suggest unidentified resiliency and new pathways for intervention. For YAs with emotional or behavioral difficulties and delinquency histories, early achievement of stable, rewarding employment has been found to predict long-term successful adjustment (Sampson & Laub, 2003) including reduction in SUD; this factor could serve a similar role in YAs with ADHD, who, in general, have frequent job changes and underemployment (Barkley, Murphy, & Fischer, 2010; Weiss & Hechtman, 1993). Assuming family responsibilities, or changing beliefs about whether they still "have" ADHD in adulthood, also may shift SUD trajectories for some YAs.

The developmental stage of young adulthood (21-25 years) or "emerging adulthood" is precisely the period during which individuals confront a number of challenges, such as completing academic or vocational training, obtaining rewarding employment, family formation and residential changes, and developing independent living skills and resources. This is also a high-risk age for SU, which can have a substantial negative life impact for those who abuse or become dependent (Schulenberg, Sameroff, & Cicchetti, 2004).

In this report, we describe the design, sample, and methods for a qualitative interview study of a subsample of YAs who participated in the larger MTA (which relied on traditional survey, interview, and paper-and-pencil measures) beginning at ages 7 to 9. The MTA sample is especially valuable because of its size and quantitative SU and diagnostic data across a 14- to 16-year time period. There are two sources for quantitative evidence in this report: (a) the "standard" MTA assessments of SU, and ADHD medication use from the longitudinal study, and (b) the quantitative data yielded from the ordinal scale coding of the qualitative interviews. The qualitative data are narrative text excerpts from the interview. We describe (a) the sample; (b) the interview design and format; (c) interview administration; (d) topics covered and coding procedures; (e) description of MTA drug use and ADHD medication; (f) reliability of coding of interview excerpts; and (g) analysis of SU beliefs comparing ADHD and a local normative comparison group (LNCG).

Method

Sample Selection

Participants in the present study were from the longitudinal follow-up of the MTA. Children with ADHD (N = 579) received a diagnosis of ADHD, Combined Type at study entry when they were 7.0 to 9.9 years old (Grades 1-4; Group, 1999a). Children were randomly assigned to one of four treatment groups: Medication Only (MedMgt), Behavioral Treatment Only (Beh), Combined Treatment (Comb), or Community-Treated Comparison (CC). Study treatments are described in Wells et al. (2000), Greenhill et al. (1996), and the MTA Cooperative Group (1999b). Participants were assessed at completion of the 14-month treatment phase, at 24 and 36 months, and again at 6, 8, 10, 12, 14, and 16 years after randomization. The LNCG (N = 289) was recruited at the 24-month point from the same schools attended by the children with ADHD, selected not for ADHD but for demographic similarity (Molina et al., 2007). By the 16-year follow-up, MTA sample retention was 76% (72% of ADHD, 84% of LNCG); 81% of the MTA sample participated 5 or more

Table 1. MTA Qualitative Study Sample Demographics.

	ADHD (n = 125)	LNCG (n = 58)	Test statistic	p
Age	24.40 (1.18)	23.74 (0.95)	$t(181) = 3.75$	<.001
Sex				
Male	95 (76%)	45 (77%)	$\chi^2(1) = 0.06$	.81
Female	30 (24%)	13(23%)		
Race/ethnicity			$\chi^2(5) = 5.00$	.42
White	90 (72%)	49 (85%)		
African American	12 (10%)	2 (3%)		
Asian	1 (1%)	1 (2%)		
Mixed	15 (12%)	3 (5%)		
Non-Black Hispanic	5 (4%)	2 (3%)		
Other	2 (2%)	1 (2%)		
Site (%)				
Berkeley	36 (29%)	16 (28%)	$\chi^2(3) = 0.18$	.98
Duke	36 (29%)	16 (28%)		
Irvine	35 (28%)	18 (31%)		
Montreal[a]	18 (14%)	8 (14%)		

Note. MTA = Multimodal Treatment Study of ADHD; LNCG = local normative comparison group.
[a]Montreal's *N* reflects their original sample, half the size of most MTA sites.

times between the 24-month and 16-year follow-up assessments: 76% (441/579) of ADHD participants and 91% (264/289) of LNCG participants.

Participants in the Qualitative Interview Study

One hundred eighty-three participants from the ADHD and LNCG groups were recruited. To minimize participant burden and interview contamination, qualitative interviews were conducted either (a) more than 2 months before the 14- or 16-year assessment, or (b) more than 2 weeks after the 14- or 16-year assessment.

Recruitment aimed to fill four cells in a 2 (ADHD vs. LNCG) × 2 (persistent substance user vs. abstainer/experimenter) unbalanced design with the intention of oversampling participants with an ADHD history as well as participants with persistent SU into early adulthood. Participants were from four of the original seven MTA sites: University of California, Irvine (n = 53); Duke University Medical Center (n = 52); University of California, Berkeley (n = 52); and Montreal Children's Hospital (n = 26). A total of 58 persistent substance users participated. The remaining ADHD participants were randomly selected from those not identified as persistent substance users, stratified by original treatment group assignment. The remaining LNCG participants were randomly selected from the available pool of participants not identified as persistent substance users. Only five potential qualitative interview study participants declined participation. Table 1 summarizes sex and race/ethnicity for ADHD and LNCG. The two samples are similar demographically.

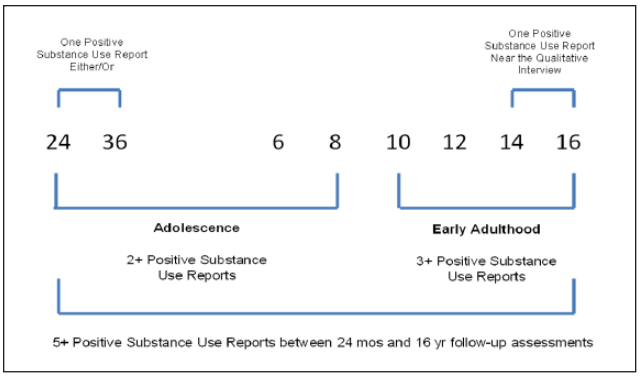

Figure 1. Timeline of MTA follow-up assessments and substance use criteria for selection into qualitative interview study.
Note. MTA = Multimodal Treatment Study of ADHD.

Persistent Drug Use and Use of ADHD Medication Scores

Persistent substance users were identified for the qualitative interview study by their positive SU self-report for any non-tobacco substance exceeding designated thresholds at five or more assessments between 24 months and 16 years. Use of alcohol, marijuana, and other illicit drugs (e.g., cocaine) and misuse of prescription drugs were measured at these assessments with the Substance Use Questionnaire (SUQ; Molina & Pelham, 2003). Two of the five positive reports were required to occur in adolescence (between the 24-month and 8-year follow-ups) and three were required in adulthood (between 10 and 16 years; Figure 1). Because of infrequently reported SU at the 24- and 36-month visits when the

children were between the ages of 9 and 14 (Molina et al., 2007), report of SU at either or both of the 24- and 36-month assessments was counted as one positive report.

Each positive SU report was based on developmentally specific thresholds selected for each type of substance and developmental period. These thresholds were chosen to reflect the well-established prognostic importance of early onset and the well-established escalation that occurs between childhood and adulthood (Chassin, Colder, Hussong, & Sher, 2015; Windle et al., 2008). For example, it has long been known that drinking more than a sip of alcohol before age ~15 is associated with later alcohol-related problems (Grant & Dawson, 1997; Odgers et al., 2008). However, because the majority of adolescents have consumed alcohol by high school graduation, a higher threshold of alcohol frequency is required to capture atypical drinking at older ages (coded as at least monthly alcohol use during the past 6 months). Given that SU peaks in early adulthood (Substance Abuse and Mental Health Services Administration [SAMHSA], 2012), weekly SU (e.g., weekly binge drinking or drunkenness, weekly marijuana use, etc.) was required for a positive SU report at the 12- to 16-year assessments. Thus, our developmentally specific thresholds for positive SU reports were the following: any SU by early adolescence, monthly SU in mid-to-late adolescence, and weekly SU in adulthood.

SUQ. The SUQ (Molina & Pelham, 2003) adapted for the MTA (Molina et al., 2007; Molina et al., 2013) includes questions about alcohol, tobacco, marijuana, other illicit drugs (e.g., cocaine), and misuse of prescription drugs. Items address lifetime use (e.g., "Have you ever had a drink of beer, wine, wine cooler, or liquor—not just a sip or a taste of someone else's drink?"), age of initial use (e.g., "How old were you the first time . . . "), and past 6 months frequency/quantity (e.g., "During the past 6 months, how often did you drink beer, wine, wine coolers, or liquor?" and "In the past 6 months, how many times did you drink five or more drinks?"). Response options for frequency items were typical of SU measures in longitudinal studies (e.g., 1 = *never* to 9 = *more than twice a week*). The SUQ was modeled after similar SU measures in longitudinal or national survey studies of alcohol and other drug use that also rely on confidential self-report (Donovan, 1994; Jessor, Donovan, & Costa, 1989; National Household Survey on Drug Abuse, 1992; Winters & Fahnhorst, 2005).

Medication use. The Services for Children and Adolescents–Parent Interview (SCAPI) obtained a detailed caregiver account of psychotropic medications through the 10-year assessment; after that medication use was collected from the Health Information Questionnaire self-report (Jensen et al., 2004). These data were used to estimate daily dose (in mg equivalents of methylphenidate) of stimulant medication and number of days treated between assessments, as well as cumulative total dose. An operational definition of adequate treatment developed by MTA investigators was medication on more than 50% of days since the prior assessment.

Interview Methods, Design, and Format

Investigators developed a qualitative interview based on the Ecocultural Family Interview (EFI; Duncan, Huston, & Weisner, 2007; Weisner, 2002, 2011a, 2011b; Weisner & Fiese, 2011), a guided conversation with prompts. Topics are based on theory and on the particular focus of the study (in this study, ADHD, SU, life turning points, and related topics). The EFI is a conversational interview, not a questionnaire or question-response survey using a Likert-type or yes–no question format. Following general guiding questions, the words, concepts, accounts, explanations, and narratives come from the participants. The explanations and accounts regarding, for example, SU or YAs' turning point understandings of ADHD are provided by the participants, not selected from a prepared checklist. Respondents are encouraged to "tell their story" about their lives and each topic (Table 2). The interview includes open-ended questions about SU, key transitions and life changes, and experiences regarding ADHD, medication, and SU.

The interview was piloted and refined with 16 YAs and their parents (not part of the study sample; Murray, 2010). The team then designed a semistructured script or template (the topics in Table 2) that was used to prompt MTA YAs throughout the interview.

EFI administration. Following extensive training, master's level, doctoral, or post-doctoral interviewers completed EFI interviews. To ensure coverage of all intended domains, every topic was addressed with prompts as needed. YAs were assured that no information from their interview would be shared with other family members. Institutional review board (IRB) approvals and an National Institutes of Health Certificate of Confidentiality strengthened the assurance of privacy. Interviews lasted 50 to 120+ min; most were 1.5 to 2 hr.

Interview transcript indexing and coding. EFI interviews were digitally recorded, transcribed, and entered into the software system, Dedoose (Lieber & Weisner, 2010). Our initial reviews of the text, consultations with interviewers, consideration of the literature, and our clinical experience guided our iterative selection of topics to be coded. Sixteen main topics were coded: substance use; possible protective/risk factors; stressors; current social supports; early support and stressors; positive social involvement of youth; self-knowledge and goals; ADHD effects and perceptions; memories of prior participation in MTA; life turning points; school; work; future

Table 2. Interview Template: Topics Discussed and Prompts for YA Ecocultural Family Interviews.

Topics discussed	Sample interviewer prompts
General overview	What's going on in (school, family, work, or living situation) these days? Walk me through an average day for you. How satisfied are you with how things are going in life right now? What are things that are stressing you out these days?
Perceptions about the MTA Study and ADHD (if relevant)	What do you remember about being in the MTA study? What would you want the MTA team to know? What does "having ADHD" mean to you? How do you manage your ADHD? Was ADHD medication a good idea for you? (if relevant) What makes you similar and different from others (e.g., emotionally)?
Substance use	Over your whole life, what kinds of illegal and legal drugs have you tried? How did things seem to start with (insert substance)? Is there a certain substance you like best? Why do you think that is? How did your use change, or not change, over time? In what ways, if any, did your use of an ADHD medication impact your use of (insert substance)?
Work	Can you describe your current job? What would you change about your work situation if you could? What kinds of difficulties are going on at work?
Future plans/goals	What are your hopes for the future (e.g., personal, work, family, friends, romantic relationships)? What are your fears about the future? What would you like to accomplish? What are your expectations about what might actually happen?
Family	Who are you closest to in your family? How have relationships changed as you've grown up? Has anyone had a big influence on you? Who are your role models?
Peers	Outside of family, do you have people you can really count on? Tell about your romantic relationships. What would you change about your social life if you could?
School	Is there anything you'd do differently as you progressed through school? What was your parent's role in your schooling (now and in the past)? What advice would you give to teachers now if you could go back and talk to them?
Turning points	What kinds of people/experiences really influenced you or your direction in life? Without this turning point, how would things be different for you? What situations or turning points would you really not want to change? Who/what are the greatest influences on you today?
Self-knowledge and identity	How would you describe yourself now compared to 4 to 5 years ago? What are some strengths and weaknesses you see in yourself? Thinking about ADHD, in what ways is that a part of you? Do you see yourself as a role model for any one or in any way?
Conclusion	What have we missed that's important to you? What would you say to the leaders of this project about what's important to you? What should we include in future interviews and make sure to discuss?

Note. MTA = Multimodal Treatment Study of ADHD.

plans; parenting memories; relationships with families and friends; and mentions of emotional functioning. Interview excerpts (a sentence, several sentences, up to a paragraph in which the content of the narrative is on that topic) were *indexed* (tagging of text by topics; for example, marking excerpts in which reasons for SU desistance are discussed) and *coded* (on an ordinal scale from 0 = *unimportant* to 8 = *very important*). The ratings typically measure the *perceived importance*, *extent*, *or severity* of an item, for example, importance of seeing the consequences of SU for others in sustaining desistance from SU.

Results

Rating and Coding Reliability

Lead rating coordinators at each site, along with the University of California, Los Angeles (UCLA) team leaders, did

indexing, and established initial coding reliability. Interview excerpts across the sample, across sites, and across all topics were randomly selected for estimating reliability of coding. Other interviewer/raters coded these excerpts, which were then compared with lead rater scores. Raters were blind to scores of other raters and to sites from which excerpts came. All the individual topics and subtopics in Table 3 (nine coded SU topics) had Kappa coefficients >.70 and averaged .80.

Frequency of substance use topics and codes. SU topics were extensively discussed in the interviews, totaling 3,566 interview excerpts. In all, 180/183 YAs had at least one such excerpt, averaging 19 excerpts/YA covering all SU topics coded. Nine SU topics were identified and coded (Table 3, column 1). For example (row 7 of Table 3), "Extent to which seeing others 'go down wrong path' influenced decisions about substance use" was described as a reason for desistance by 100/183 YAs (55%; 65/125 [52%] ADHD and 35/58 [60%] LNCG participants). Table 3 also shows the average number of responses and standard deviation for those who had at least one coded interview excerpt. YAs who talked about each SU topic typically offered two to five distinct codable excerpts.

ADHD versus LNCG group differences across topics. ADHD youth were more likely to feel strongly that when they saw others going down the wrong path, this was more likely to have influenced them to desist from SU ($t = 2.86$, $p = .006$). No other coded excerpts (six of seven tests in Table 3) were significantly different comparing ADHD and LNCG SUs.

Connections between ADHD medication use and SU: Narrative data

ADHD medication and SU. Many participants commented that ADHD medication use never influenced their SU. Instead, they said that seeing peers with difficulties, their own choices, and other turning points in their lives influenced SU. These comments extend and support the quantitative finding that YA in the ADHD group saw others going down wrong paths and this led them to less SU, but the other influences were described similarly by ADHD and LNCG YAs. Many said that generalizations about SU and ADHD are difficult, as "everybody's different" and everyone's situations are different. Some said that medication affected them not through the direct effect of ADHD medication per se, but rather through feeling marked or labeled because of their ADHD diagnosis. One woman who felt this way commented that " . . . It's who people are, not medication or ADHD itself. You make your own decisions." Another saw a connection, but not due to any effects of the ADHD medications, rather due to the "messages" she got from her parents and doctors implying her needing to be medicated, to the perception of themselves as a person who "needed to be medicated," which made her want to fit in to a group of peers doing drugs. " . . . Yeah. I guess I never really felt like I fit in, so I think drugs kinda helped me to feel like I was fitting into a group—the druggie group."

Other YAs commented that there *was* a connection between taking medication and having ADHD—but that this experience does *not* lead to SU: " . . . dealing with ADHD is hard enough; so why take drugs and have to deal with drugs too?" as one YA said. Others argued that ADHD medication is a protective factor against SU because they just "hated taking any pills."

> … you know what? I think it [ADHD meds] was the *protective* factor. I hate taking pills, and I was so terrible [about taking pills]. I would sneak around to [not] take my medicine. I would stick the pill in the side of the vent on the water fountain to keep from taking it. I was that bad. I hate taking medicine. I hate taking pills, so when I was approached by people, to take drugs or whatever, there's not even a second thought. I remember first time I ever went to a rock "n" roll show, and one of the guys in one of the bands was trying to get me to take Ecstasy, and I was like—"I hate taking pills. You can count me out."

Others said the ADHD-SU connection was there but only in regard to the choice of which drugs to take, not about overall likelihood of SU, which would have happened anyway. Some viewed medication as a "good excuse" for SU: "why wouldn't I then try anything [since I am taking Adderall anyway]?" On the contrary, another YA said Adderall does not count as a real drug because it does not "do" anything to you, while other drugs get you high; so for him, it did not influence SU.

> I don't use my ADHD medication to get high or I don't use my ADHD medication to feel all woozy or feel all cracked out . . . I don't like that feeling.

Reasons for a connection between medication use and SU. However, 20 participants (16%) in the ADHD sample *did* experience medication use as a risk for using other drugs. One YA commented that ADHD medication was an influence on him. "I'm surprised I'm not on more drugs, to be honest." One recurring theme focuses on the recollection of just getting "used to the feeling" of doing drugs as a child. One YA wanted to counter "feeling like a drone" on ADHD meds by using other substances to feel good.

> I think my personal opinion is pretty much if [you are] on drugs from a young age and they're used to that feeling, after a while they want to find out—they want to pretty much feel normal. They don't want to feel like a drone anymore so they'll try pretty much anything to pretty much get a high, feel good or something. So maybe it will [increase] the chance of drug use down the road.

Some of these YAs said that ADHD diagnosis and medication use can just "provide me with an excuse" to do other substances.

Table 3. Mean Differences Between ADHD and LNCG Youth for Nine SU Topics.

	ADHD participants					LNCG participants					Significance		
SU—Nine coded topics	Number of respondents mentioning topic (out of 125)	Average number of responses per person	Average score coded for this topic (0-8)	Median number of responses	*SD* of number of coded responses per person	Number of respondents mentioning topic (out of 58)	Average number of responses per person	Average score coded for this topic (0-8)	Median number of responses	*SD* of number of coded responses per person	*T*-test statistic	Degrees of freedom	*p* value
Relationship between emotional functioning and SU initiation or maintenance.	75	6.49	2.83	3	1.78	28	5.25	3.29	3	1.77	−1.18	48.85	.244
Extent to which negative experience impacted SU	84	3.58	3.93	4	1.70	35	4.94	4.02	4	1.92	−0.26	57.38	.796
YA's opportunities for SU	106	4.65	5.15	5	0.69	49	5.51	5.01	5	1.07	0.84	67.08	.405
Extent of connection made between ADHD drugs and use of other substances (e.g., substituted for ADHD drugs; led to other use; led to abstention; dual use)	107	1.68	2.64	2	2.42	—	—	—	—	—	—[a]	—	—
Extent to which people in his or her family influenced/impacted use/non-use.	108	2.93	4.44	5	1.70	52	2.94	4.31	4	1.67	0.45	102.83	.650
Extent to which YA perceives SU as a negative experience	110	5.19	3.83	4	1.59	50	5.56	3.79	4	1.34	0.17	111.15	.867
Extent to which seeing others go "down wrong path" influenced decisions about SU	**65**	**1.89**	**4.99**	**5**	**1.95**	**35**	**1.86**	**3.85**	**4**	**1.88**	**2.86**	**72.09**	**.006**
Extent to which SU has a positive impact in other ways	93	3.84	3.42	3	1.60	40	4.88	3.13	3	1.56	0.96	75.69	.340
Extent to which SU has a positive impact on ADHD symptoms	73	2.00	3.34	4	2.26	—	—	—	—	—	—[a]	—	—

Note. LNCG = local normative comparison group; SU = substance use; YA = young adults.

[a]For the two topics out of nine that refer to how ADHD influences SU ("Extent of connection made between ADHD drugs and use of other substances, for example, substituted for ADHD drugs; led to other use; led to abstention; dual use," and "Extent to which substance use has a positive impact on ADHD symptoms"), there is no meaningful *t*-test comparison with the LNCG sample.

> . . . as far as I'm concerned, saying something like that [that taking Adderall and having ADHD, leads to SU] [is like saying that] living with something like that is how addicts say they got a disease: "It's not my fault, because I got a disease." I got ADHD real bad and they fed me full of amine compound and now I'm smoking meth, that's my, you know, it's an excuse for using drugs.

Fit with work life after high school; little or no connection with medication use. A number of YA described searching for work which fit their behavioral, cognitive, and emotional tendencies (work with their hands, active work such as in restaurants, work that kept them busy and therefore focused, work they cared about). Improved fit led to less of a need for drugs, or medication, or perhaps only limited drug use at occasional periods. One YA commented,

> I would say that there's no relationship [between using or not using ADHD prescription medications, and SU]. You're going to do what you're going to do, whether you're on medicine or not. I've been on both sides, I've taken the [ADHD] medicine, I've not taken the medicine [in the past]. And to me, it was kind of like, oh, I started [using substances] when I took the medicine, and I'm still [using] after the medicine. So the medicine didn't affect me either way, it don't bring me down from it or make me do drugs any more [than I was going to use anyway].

Discussion

There were a wide range of beliefs regarding connections between SU, medication use, and ADHD symptoms, and many were novel and certainly not straightforward. These accounts included narratives about the importance of personal choice and responsibility, beliefs that individuals are so different and contexts are so different that there is no pattern in these connections, beliefs that there is a kind of inevitability that SU will be a part of who they are as someone with ADHD, and the belief that ADHD can be used as a kind of "excuse" for SU. Other YAs experienced ADHD as being a marker for difference earlier in life, then leading to SU, rather than the medications themselves being a gateway to SU. Some classified medications for ADHD being different from "party" drugs (because party drugs actually "do something," for example), so there are not connections between using the medications and SU. Other YA thought that only when there is concurrent use of medications along with other drugs would there be a "connection" between them, while others argued that SU is unconnected to ADHD medication because it is already hard enough having ADHD, much less to add the hardships of drug use.

The qualitative narrative accounts expand the findings from quantitative measures by discovering some of the diverse ideas and explanatory models and beliefs of the YA themselves. Many YAs with ADHD who experience multiple risks do not develop problems with substance abuse or dependence, and their accounts suggest a number of shared beliefs associated with desistance, unidentified resiliency, and new pathways for intervention. Further analyses of systematically selected cases looking across turning points, demographics, work and school experiences, romantic relationships, and their connections to SU will add value going forward to connect these ideas to other aspects of YA lives. Framing messages regarding SUD using the kinds of everyday perceptions and accounts in these YA narratives could improve interventions.

Clinical Implications

Our overall results indicate that the explanations given by individuals with ADHD for their SU decisions (initiating, persisting, desisting) generally do not differ from individuals without ADHD (leaving aside the important questions about medications or stigma and SU that were specific to the ADHD sample), nor are there consistent or strong relationships between previously prescribed stimulant medication and subsequent SU. Individuals with and without ADHD do note the strong importance and negative impact of the ready availability of illicit substances, the overall negative impact of SU experiences on themselves, and the positive impact of family members on their SU decisions.

However, the beliefs about connections among ADHD, medication, and SU actually differ widely; beliefs that there were straightforward direct connections were not typical. YAs have a complex belief system regarding what drugs are, as well as how ADHD in the past and now has affected them, and such knowledge can lead to more effective intervention. Clinicians working with substance-abusing YA might use this knowledge to heighten their patients' determination to abstain or desist from SU. More specifically to individuals with ADHD, our findings suggest that they may attribute greater importance to "seeing others go down the wrong path" than individuals without ADHD. Such findings, if replicated, might also be used during therapy to increase their motivation to abstain or desist from SU.

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Declaration of Conflicting Interests

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