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Journal
Journal of Attention Disorders, 25(5)

ISSN
1087-0547

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Publication Date
2021-03-01

DOI
10.1177/1087054719837743

Peer reviewed

HHS Public Access

Author manuscript

J Atten Disord. Author manuscript; available in PMC 2022 November 21.

Published in final edited form as:

J Atten Disord. 2021 March ; 25(5): 724–735. doi:10.1177/1087054719837743.

A Qualitative Analysis of Contextual Factors Relevant to Suspected Late-Onset ADHD

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Abstract

Objective: Recent studies suggest attention-deficit/hyperactivity disorder (ADHD) may emerge post-childhood. We integrate qualitative methods to systematically characterize contextual factors that may (a) delay identification of ADHD in childhood and (b) inform why ADHD symptoms emerge post-childhood.

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Method: Suspected late-onset ADHD cases from the local normative comparison group of the Multimodal Treatment Study of ADHD completed a qualitative interview (14 young adults and 7 caregivers). Interviews were qualitatively analyzed.

Results: We identified five themes. Three themes may attenuate or delay identification of childhood ADHD: external factors (e.g., supportive adults), internal factors (e.g., strong intellectual functioning), and other factors (e.g., dismissive attitudes towards ADHD). Two themes may accompany an increase in ADHD symptoms post-childhood: external factors (e.g., increased external demands) and internal factors (e.g., perceived stress).

Conclusion: Clinicians should probe these factors in suspected late-onset cases to address (a) whether, how, and to what extent ADHD was attenuated in childhood and (b) why symptoms emerge post-childhood.

Keywords

ADHD; Late-onset; Qualitative

Introduction

ADHD is historically considered a childhood-onset disorder, yet recent findings from birth-cohort studies challenge this conceptualization by proposing that a number of adult ADHD cases do not have childhood onset (Agnew-Blais et al., 2016; Caye et al., 2016; Moffitt et al., 2015; Riglin et al., 2016). These studies estimate that late onset of ADHD symptoms occurs in 2.5–6.3% of adolescents and adults (Caye, Sibley, Swanson, & Rohde, 2017). However, one longitudinal sample found that late-onset almost never occurred outside of psychiatric comorbidity or substance use (Ahmad, Owens, & Hinshaw, in press). Another longitudinal sample yielded two potentially valid late-onset cases that began in adolescence and persisted into adulthood, although these cases had complex psychiatric histories that were difficult to disentangle from ADHD (Sibley et al., 2017). Thus, the validity of late-onset ADHD remains questionable. Late-onset ADHD or ADHD-like cases may represent phenotypes different from traditional conceptualizations of the disorder, requiring closer examination (Caye et al., 2017). Here, we examine variables involved with the emergence (or lack thereof) of ADHD symptoms across development among suspected late-onset cases. Whereas some cases may be misidentified as late-onset ADHD when they are actually late-identified, others who lack a childhood onset and are not symptomatic until later in development have not been thoroughly characterized.

Contextual factors potentially delaying identification of ADHD in childhood have yet to be systematically characterized. Here, we consider “context” as either (a) external circumstances or events (e.g., environmental factors, such as academic assistance), or (b) internal factors (e.g., strong intellectual abilities) (Farmer & Nelson-Gray, 2005). Because traditional diagnostic techniques do not typically consider contextual factors that may decrease recognition of childhood ADHD symptoms, supposed cases of late-onset ADHD could actually be late-identified (Solanto, 2017). Certain childhood environments may attenuate the expression of ADHD symptoms or their functional impact. In such cases, onset may actually occur during childhood with symptoms or impairments masked

until developmental transitions occur and increased environmental demands overwhelm the individual.

Contextual factors associated with late-onset ADHD symptoms in adolescence or adulthood are also not systematically characterized. Environmental factors that influence the expression of symptoms—such as level of environmental demands on self-regulation or supportiveness of families—are not stable over the lifespan, particularly into adulthood. For suspected late-onset cases, changes in these factors could affect the expression of ADHD characteristics (Caye et al., 2017). In some instances, these contextual factors may provide a more parsimonious account for the late emergence of ADHD symptoms and therefore rule out an ADHD diagnosis. Yet for other cases, they may be part of a potentially valid but non-traditional, late-onset ADHD phenotype.

Methods are needed to uncover contextual factors involved in late-onset presentation. Semi-structured interviews and rating scales can provide important information, but a qualitative approach could provide a more inclusive analysis of internal and external contextual factors associated with ADHD symptom expression and related impairment via participants' own explanations, experiences, and terminology. Unless assessments consider these factors, late-identified cases may be misclassified as late-onset. In other instances, failure to consider factors that lead to the emergence of ADHD symptoms after childhood may stymie efforts to characterize a late-onset ADHD phenotype.

The aim of this exploratory investigation was to utilize qualitative interview data in order to systematically identify contextual factors that may contribute to a delayed onset of ADHD symptoms. To accomplish this aim, we examined young adult and caregiver narratives collected from suspected late-onset cases among participats in the Multimodal Treatment Study of Children with ADHD (MTA) qualitative interview study (Weisner et al., 2018). These cases were separately identified in a previous MTA investigation of local normative comparison group (LNCG) participants who initially met symptom count and functional impairment criteria for ADHD in adolescence or adulthood (Sibley et al., 2017). Our primary objective was to systematically characterize potential contextual factors that (a) may have delayed identification of ADHD in childhood and (b) may account for the emergence of ADHD symptoms in adolescence or adulthood among suspected late-onset ADHD cases.

Methods

Participants

Participants were drawn from the LNCG of the MTA. The MTA began as a 14-month randomized controlled trial of treatments for children with ADHD (ages 7.0–9.9 years at baseline) and continued as a prospective naturalistic follow-up study with regular assessments for 16 years (Swanson et al., 2017). The MTA features a large multi-site sample of children with ADHD-Combined presentation. The LNCG was recruited two years after the ADHD sample baseline (i.e., 2-year follow-up = LNCG baseline) and was composed of 289 age- and neighborhood-matched classmates. Additional study assessments were completed at 3-, 6-, 8-, 10-, 12-, 14-, and 16-years.

Among the LNCG, 258 did not meet diagnostic criteria for ADHD on a semi-structured interview during their baseline assessment in childhood. Of those, 239 had sufficient follow-up data. For the current analysis, participants were drawn from the LNCG. First, there were 56 LNCG participants who did not meet childhood ADHD diagnostic criteria on the Diagnostic Interview Schedule for Children (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) at baseline, but who did meet symptom count and impairment criteria on rating scales in either adolescence or adulthood (Sibley et al., 2017). These 56 participants were suspected late-onset cases. There were three reporting sources of ADHD symptoms in adolescence (parent, teacher, self) and two in adulthood (parent, self). Individual ADHD symptoms were considered present if endorsed (i.e., score of 2 or 3 on a scale of 0 "not at all" to 3 "very much") by any rater. For impairment among suspected late-onset cases, there was one reporting source in adolescence (parent) and two in adulthood (parent, self) using empirically supported cut-off scores. Second, 14 of the 56 suspected late-onset cases participated in a qualitative MTA study that occurred in young adulthood (Weisner et al., 2018). These 14 cases comprised the current sample. Among these cases, there were 14 young adult and 7 separate caregiver qualitative interviews. The majority of these young adults were male (n=12) and White (n=10), which is broadly consistent with the demographics of the MTA sample. Mean age of the 14 participants was 23.36 years (range=22.34–25.50) at the time of their qualitative interviews. The MTA qualitative study oversampled participants with persistent substance use through adolescence into early adulthood. As a result, about half of the sample for this analysis (n=8, 57%) endorsed persistent substance use (Weisner et al., 2018).

For this exploratory analysis, we included different types of suspected late-onset cases identified in Sibley et al. (2017)—those that were confirmed as late-onset (n=2/14), those that were eventually ruled out (n=8/14), and those that did not meet criteria for ADHD on the semi-structured interview at LNCG baseline but had exhibited childhood symptoms on other measures (n=4/14)—to identify a broad range of factors that may influence ADHD symptom expression and related impairment across childhood, adolescence, and adulthood. The two confirmed cases met criteria for adolescent-onset ADHD with elevated symptoms that persisted into adulthood. Both cases had superior intellectual functioning in childhood at baseline. The eight participants ruled out as late-onset were so categorized because of symptoms that were not pervasive across settings (n=1), or were better accounted for by psychiatric comorbidity (n=3) or substance use (n=4).

Procedures

Interviewing.—Interviews occurred proximal to MTA participants' regularly scheduled 14- or 16-year assessment. The qualitative interviewing approach—the Ecocultural Family Interview (Weisner et al., 2018)—featured a two-hour guided conversation about the past, present, and future with interviewer prompts to discuss certain topics if the information did not spontaneously emerge. These interview prompts were piloted and refined in a separate sample (Weisner et al. 2018). Topics included a range of ADHD and functioning domains such as relationships, academics, work, and substance use. Examples of prompts were:

"What does ADHD mean to you?"

"How has your participation in the MTA study affected your view of yourself?"

"What do you want the MTA team to know (about ADHD or anything)?"

"How did parents/teachers impact how things went in school when you were younger?"

Identifying themes.—As described in Weisner et al. (2018), interviews were digitally recorded, transcribed, and entered into a web-based database for qualitative data (Dedoose.com; Lieber & Weisner, 2010). For this analysis, an iterative process was followed similar to other qualitative approaches (e.g., Mitchell, Sweitzer, Tunno, Kollins, & McClernon, 2016) to identify a list of themes for coding. The process to identify themes occurred after the interviews were completed and therefore were not pre-determined when the interviews were administered. Instead, theme content identification was driven by the *a priori* aims of this study and then by the content of the interviews themselves. First, an *a priori* list of themes pertaining to the main aims of this paper was generated among the co-authors before the interview transcripts were reviewed. Second, one of the authors read about half of the 21 interview transcripts in full to refine the list, which was followed by further discussion and refinement with the co-authors. Third, the same author read the remaining transcripts in full and the list was finalized after further discussion and refinement with the co-authors. The following themes were identified in the interview transcripts (as well as subthemes, which are addressed in the Results):

Theme 1: External factors that may have attenuated ADHD symptoms or impairment in childhood

Theme 2: Internal factors that may have attenuated ADHD symptoms or impairment in childhood

Theme 3: Other factors that may have reduced the likelihood of identifying ADHD in childhood

Theme 4: External factors that may have accompanied increase in ADHD symptoms post-childhood

Theme 5: Internal factors that may have accompanied increase in ADHD symptoms post-childhood

The five themes were either focused on expression of ADHD in childhood (Themes 1–3) or adolescence or adulthood (Themes 4–5). These themes were not mutually exclusive within participants. That is, the same participant could endorse multiple themes.

Coding themes.—Qualitative coding involved two co-authors who read the 21 interview transcripts (14 young adult, 7 caregiver). Any interview excerpts that pertained to or were discussed in the context of ADHD behaviors or characteristics—such as ADHD as a diagnosis or ADHD treatment—were identified in Dedoose. There were 361 such interview excerpts across the 21 interviews. One rater conducted all of the coding of these excerpts. The rater identified whether a particular theme was applicable. Each individual excerpt could be assigned to one or more themes. Endorsing a particular theme did not require the participant to explicitly connect it with ADHD (e.g., a participant who

reported being diagnosed with ADHD in adolescence and was excessively inattentive but quiet in elementary school did not have to explicitly identify being non-disruptive as a reason his or her ADHD was not identified earlier). Instead, the rater used their judgment to determine whether an endorsement was warranted, keeping in mind the purpose of identifying potential contextual factors. This qualitative coding was similar to other analyses (e.g., Weisner et al., 2018). A second rater, who was blind to the scores of other rater, coded a portion of the excerpts for reliability. Cohen's Kappa coefficient was 0.93 between raters when determining whether a theme should be endorsed, indicating excellent agreement. Identification of themes and coding was conducted separate from previous analyses of this qualitative MTA dataset (Jensen et al., 2017; Lasky et al., 2016; Mitchell et al., 2017; Swanson et al., 2017; Weisner et al., 2018). Therefore, none of the theme content or coding process overlapped.

Data Analysis

Frequency of theme and subtheme endorsements are reported, as well as examples that typified theme endorsements for illustrative purposes. Endorsements were based on at least one reporting source for each of the 14 participants: young adult or caregiver. These endorsement rates are reported to characterize the sample with the overarching aim of systemically identifying contextual factors that may influence the expression of ADHD behaviors and their impact across development—endorsement rates are not reported as generalizable prevalence estimates of how often themes and subthemes occur in suspected late-onset cases.

Results

Themes 1–3: Factors that may have Attenuated or Reduced the Likelihood of Identifying ADHD in Childhood

Overview.—Three themes involving childhood factors were identified: external factors that may have attenuated ADHD symptoms or impairment in childhood (Theme 1: 93%), internal factors that may have attenuated ADHD symptoms or impairment in childhood (Theme 2: 71%), and other factors that may have reduced the likelihood of identifying ADHD in childhood (Theme 3: 57%) (Table 1). All 14 participants endorsed at least one theme. Forty-three percent (n=6) endorsed all three themes, 21% endorsed Themes 1 and 2 (n=3), 21% endorsed only Theme 1 (n=3), 7% endorsed only Themes 1 and 3 (n=1), and 7% endorsed only Themes 2 and 3 (n=1). Appendix A summarizes theme endorsements based on reporting source and theme endorsements for each individual participant with reference to individual outcomes from Sibley et al. (2017).

Theme 1: External factors that may have attenuated ADHD symptoms or impairment in childhood.—Eight subthemes emerged for Theme 1. The most common included the presence of supportive adults during the participant's childhood who may have reduced ADHD symptom severity or the functional impact of ADHD symptoms (64%). Comments characterizing this theme described family members or teachers who appeared to provide additional external structure that assisted with organization, time management, or planning. For example, one young adult male stated the following about his parents:

> "they always asked me did I have any homework […] they would have my teachers' cell phone numbers. So [if] they didn't think I had any homework, they might call them up and ask them and they would let them know if I had it or not. And if I did have homework and I just didn't do it, they would make sure it would get done."

Another subtheme included having another family member who exhibited other psychiatric symptoms that were relatively more severe (36%). Although this subtheme may have not actually reduced ADHD symptom severity or impairment, it may have contributed to perceptions that minimized ADHD symptoms or functional outcomes that were observed. For example, one female young adult stated:

> "my mom is definitely bipolar, borderline schizophrenic, a lot of paranoia, obsessiveness that I've had to deal with growing up. If anything she drove me crazy."

Another subtheme included non-traditional school placement, such as home schooling (36%). Unofficial supportive classes (e.g., small class sizes that allowed for more individualized teacher assistance; 29%) and official accomodations (e.g., Individualized Education Plan or 504 Plan; 21%) that may have attenuated ADHD symptoms or impairment in childhood emerged as well.

An additional subtheme included having ADHD that ran in families (21%). Here, the ADHD behavior of children may not seem excessive relative to other family members. For instance, one male young adult mentioned that getting diagnosed with ADHD in the community (i.e., outside of the MTA protocol; see Appendix B for a summary of participants diagnosed with ADHD in the community) around age 15 may have been delayed in childhood because it was normative in his family to exhibit ADHD features:

> "everybody in my family assumed that […] I had ADHD, because all of them did also. I mean my dad definitely has ADHD. All of his brothers and sisters definitely do and then about half of his brothers' and sisters' kids do. And then my brother does as well. […] I'm like a little bit less hyperactive version of my brother, but I mean it was still kind of obvious that I had ADHD, so it wasn't like it was a big deal getting diagnosed."

Finally, receiving psychosocial treatment strategies that did not explicitly target ADHD but may have improved ADHD symptoms, such as learning cognitive-behavioral strategies also emerged (21%).

Theme 2: Internal factors that may have attenuated ADHD symptoms or impairment in childhood.—Three subthemes emerged. The most common included reference to child strengths or resilience (64%), including strong intellectual functioning and being gregarious. For example, one young adult male commented on how he was a strong test taker, which may be indicative of a higher IQ and how prominent ADHD symptoms (e.g., avoiding tasks that require sustained mental effort) could occur in the absence of clinically significant impairment:

> "I refused to do homework when I was a kid. … I would squeak by with a 'C minus', …. I would literally like ace all their tests. I would just get super good scores […] but […] I would never do homework."

As another example, one female commented on how her inattentiveness was noticeable to teachers to the point that they expressed concerns, but her grades were not negatively influenced, which she attributed to her intellectual functioning:

> "I remember […] my desk literally sat outside the classroom—I was never disruptive because like I said, I was quiet—for never paying attention. Or sometimes not completing my schoolwork and then start to do something else and she'd be like, 'Why didn't you finish?' […] I never got D's or F's. I graduated high school with like a 3.8. I remember being in elementary school though and they thought that maybe I had a learning disability but in fact, […] I had a 134 IQ."

Other resilience factors included being gregarious and well-liked by adults as a child. For instance, one parent commented that her child's tendency to often lose focus was less impactful because:

> "Teachers loved him. […] Teachers and adults love[d] him"

Another parent made the following comment that also captured this subtheme:

> "I can remember this teacher saying – I think it was him – that [he] is respectful. […] He might not be doing his work. He might be coming to class late, but in other words, he is respectful. He's behaving the way he's supposed to be, […] he had problems doing the work, and that – the teachers didn't like that, but he was respectful, yeah."

Second, non-disruptiveness in the classroom emerged as a subtheme (43%), which consequently attracted relatively low levels of teacher concern. Examples typically included comments such as, "*I was never disruptive [in class]*" and "*he never really showed signs [of hyperactivity]*" despite the presence of concerns about focus.

Finally, perceptions that childhood behavior was only mildly impairing lessened concern about ADHD behaviors (14%). For example, one parent of a young adult male who was later diagnosed with ADHD in the community (i.e., outside of the MTA protocol) stated that her son was inattentive had trouble focusing in the classroom as a child, but that this was not concerning to her because:

> "You had to push him, but he didn't – he wasn't one of those that was flunking out."

Theme 3: Other factors that may have reduced the likelihood of identifying ADHD in childhood.—Four subthemes emerged for Theme 3. The most common included other concerns in the home that overshadowed ADHD (57%), such as abuse in the family. For example, one young adult male who reported being diagnosed with ADHD in the community (outside of the MTA) recounted chronic physical abuse he observed throughout childhood:

> "[My father] was abusive to my mother; my father would lay hands on my mom and that's kind of what I grew up with."

Second was the subtheme of negative or dismissive attitudes toward ADHD or ADHD treatment (21%). For instance, one mother recounted how her son, who was diagnosed with ADHD in the community (outside of the MTA protocol), was having trouble concentrating in middle school:

> "He had asked for [an ADHD assessment] in the eighth grade, and I [said] no, 'cause I knew I didn't want him on meds. … here I am, I was a school teacher, and I was very aware of people being thrown on meds and et cetera, and I just said, "You're not taking meds. You're just lazy. … you know, [ADHD medications are] speed."

Third, a lack of parental involvement (21%) and restricted access to mental health services (14%) also emerged as subthemes. As an example of the former, one parent stated that she was not very involved with her child in general and

> "I think I was too selfish on my own time."

As an example of the latter, another parent stated that

> "I think therapy would [have been] really good […], but it's expensive […] if I had had the money, I would've gotten him into special programs all the way. […] it would be great if he had a therapist and he had more taught abilities to cope with it."

Themes 4–5: Factors that may Account for Late Emergence of ADHD Symptoms in Adolescence or Adulthood

Overview.—Two qualitative themes involved factors that accompanied an increase in ADHD symptoms post-childhood: external (Theme 4: 43%) and internal (Theme 5: 71%) (Table 1). Seventy-one percent of participants (n=10) endorsed at least one of these themes, but 29% of the sample (n=4) did not endorse either.

Theme 4: External factors that may have accompanied increase in ADHD symptoms post-childhood.—

Two subthemes emerged. Twenty-nine percent of the sample indicated increased environmental demands corresponding to an increase in ADHD symptoms. Comments included increased organizational/academic demands post-childhood that required greater self-control. For example, one young adult male diagnosed with ADHD in the community (outside of the MTA protocol) mentioned that:

> "school work was so easy that it was never an issue. And then I guess in tenth grade, the workload changed [and] organizing everything was a big problem. … [this behavior worsened with] the workload increasing, because those all the problems before I got diagnosed were problems before, but it wasn't as obvious because my grades were good. […] when my workload had increased that's when it was obvious that an additional step had to be taken."

As another subtheme example, a caregiver for a young adult male with ADHD, diagnosed in the community, stated that difficulty concentrating was not evident until her son started to drive:

> "I noticed [his inattentiveness] when the driving started […] he […] wouldn't pay attention. And he'd be right up on somebody, or he'd be going way too fast, and that was one of the key things that [I] said, 'Hmm. Let's go see what's really going on.'"

The other subtheme involved chaotic or abusive home environments in adolescence or adulthood. One example includes a comment from a female young adult that involved parental substance use:

> "my mom … [was] addicted to cocaine … I mean, I would have to go pick her up off the street bare-footed and just totally out of it, screaming, crying. She blamed everything that happened on me and my sister, telling us that we're piece of shit kids, and that she's in the position she's in because of us and just that it's all our fault."

As another example of this subtheme, one young adult female commented on suffering from domestic violence by her boyfriend at the time while transitioning into parenthood:

> It was hard, because you know, I loved him, I had – he was my son's father, but he was just a dog, like he cheated on me, and he was – hit me, and you know, threw me around sometimes, but – and he was like, yelled at me.

This subtheme includes potentially traumatizing events that may either exacerbate existing symptoms of ADHD (consistent with an ADHD diagnosis) or produce these symptoms (inconsistent with an ADHD diagnosis)—in either case, these environments accompany an increase in ADHD symptoms.

Theme 5: Internal factors that may have accompanied increase in ADHD symptoms post-childhood.—Three subthemes emerged from Theme 5. The first was the occurrence of ADHD symptoms in the context of other psychiatric concerns (particularly depression or anxiety) or substance use. This subtheme occurred in 71% of the sample (n=10). To characterize these types of endorsements, one young adult female stated that:

> "I started using ecstasy, ketamine, nitrous, still smoking pot, valium—pretty much everything I could possibly do. … [Soon after being hospitalized for substance use] I was very suicidal. I wanted to kill myself and I had no health insurance to get anti-depressants or medication that I knew that I needed."

Other narratives indicated that ADHD symptoms emerged later in development because of stress that may have accompanied ADHD symptoms (14%). As an example, one young adult female stated that ADHD symptoms were more noticeable to her in the context of the stress associated with having children:

> "Well I'm stay at home with my son. I have a 3-year-old and a 4-month-old."

For this individual, although the stress was perceived (i.e., internal), it was also associated with environmental factors as well:

> "I got kicked out [of school], and so then I went to the other one, and then I went the first few months, got pregnant, and then I had to start working."

Finally, some narratives indicated that ADHD symptoms emerged later in development because neurocognitive severity worsened for no identifiable reason (14%). For example, one parent stated the following about her son who was eventually diagnosed with ADHD in the community:

> "Even though [my son] came into the study in the non-ADHD group, he ended up being diagnosed with it. … this was late with him too. This was into high school … we never experienced things as a younger kid. We never had issues with that with [my son]."

Discussion

We utilized a longitudinally assessed sample of suspected late-onset ADHD cases (Sibley et al., 2017) that also participated in a qualitative study in their early 20s (Weisner et al., 2018). This qualitative study provided an opportunity to identify contextual factors associated with ADHD symptom expression across development, which may not have otherwise emerged using a traditional, standardized assessment. Unfiltered perceptions in participants' own words can provide powerful accounts and assist with the systematic characterization of factors that clinicians should consider when assessing ADHD.

Our exploratory analysis yielded two primary outcomes. *First*, we detected contextual factors that may delay identification of ADHD in childhood. This finding is novel because these factors can inform traditional assessments of suspected late-onset ADHD by guiding clinicians to assess for previously unidentified ADHD in childhood, thereby reducing the likelihood of false positive late-onset ADHD. *Second*, we identified contextual factors that may address why ADHD symptoms emerge or are only apparent in adolescence and beyond. This finding is important because these contextual factors can be used in assessments either to rule out an ADHD diagnosis (i.e., in cases when these factors better account for the emergence of ADHD symptoms post-childhood) or to inform understanding of a non-traditional, complex ADHD phenotype that does not fully emerge until adolescence or adulthood. Future studies are needed to estimate the prevalence of endorsements in a larger, more diverse sample.

Consideration of these factors for suspected late-onset cases (summarized in Table 1 and expanded on in Appendix C as a clinical guide) would be in line with a functional analytic assessment approach (e.g., Magidson, Young, & Lejuez, 2014). Such an approach can be used to address causal and consequential variables involved with a particular behavior—in this case, ADHD symptoms and related functional impact—across different developmental periods. It may inform assessments of suspected late-onset ADHD because clinicians would be able to better address how ADHD symptoms and functioning fluctuate across time in conjunction with contextual factors listed in Table 1. Given that assessments of suspected late-onset ADHD would involve retrospective assessment of ADHD in childhood that would be limited by retrospective recall inaccuracies common in ADHD (Miller, Newcorn, & Halperin, 2010), we recommend consideration of childhood factors in concert with methods

less susceptible to recall biases (e.g., elementary school report cards). To protect against confirmation bias in assessments, we recommend that clinicians query these factors broadly, then progress to more targeted questions only when these initial queries are endorsed.

Considerations for Childhood Factors

Themes 1–3 focused on childhood symptom expression and impairment. These contextual factors included those that may have attenuated ADHD features, as well as those that may have reduced the likelihood of identifying childhood ADHD. In assessment settings, clinicians who consider these factors may be better able to address whether ADHD symptoms were elevated or functionally impairing for a brief period, which may otherwise go unidentified using traditional assessment methods. For example, if clinicians are able to identify a caregiver's additional external support to help their child complete tasks and that this caregiver support was a direct consequence of the child's previous difficulty with task completion, they might be able to more accurately articulate a case for childhood-onset ADHD. In this example, ADHD symptoms may not have been chronically elevated, but they were elevated for a circumscribed amount of time before they were artificially reduced due to caregiver support.

Suspected late-onset cases that endorse external and internal factors in childhood that attenuate symptoms or impairment may present as subclinical ADHD cases in childhood that emerge later in development. This maps on closely with a late-onset ADHD phenotype in which ADHD symptoms and impairment are expressed in a dynamic process depending on environmental features that change over time (Caye et al., 2017). Consideration of contextual factors identified here may help clinicians as they conceptualize how ADHD is expressed across development, particularly how changes in symptom severity over time above and below clinical thresholds can be reconciled with conceptualizing ADHD as a chronic condition. Studies are needed that address heterogeneity within ADHD and how those with ADHD who fit this profile differ from those who do not.

Considerations for Adolescent and Adult Factors

Themes 4 and 5 pertained to external and internal factors that may have accompanied an increase in ADHD symptoms post-childhood. These factors can potentially better account for the emergence of ADHD symptoms or can be a part of late-onset ADHD presentation. Their timing is an important issue to make this distinction. In cases in which there is no apparent childhood-onset and these post-childhood factors clearly preceded the onset of ADHD symptoms and provide a more parsimonious account of the emergence of ADHD symptoms (e.g., ADHD symptoms secondary to substance use), a diagnosis of late-onset ADHD may not be warranted. In other cases, these factors could emerge as a consequence of ADHD symptoms (e.g., impulsivity characterized by ADHD may predispose an adolescent to substance use) and warrant a late-onset ADHD diagnosis. Thus, our findings identify factors that may be involved with suspected late-onset cases, but thorough assessments that take into account timing of contextual factors associated with late-onset symptoms is necessary.

We note, particularly, the factor of chaotic and/or traumatic home environments. Because trauma exposure is more common in children with ADHD (Schilpzand et al., 2018) and exposure at a young age can increase risk of developing attention problems due to dissociative symptoms (Kaplow, Hall, Koenen, Dodge, & Amaya-Jackson, 2008), assessments for suspected late-onset ADHD should consider the different ways chaotic home environments and/or traumatic events may manifest. Primarily, this involves delineating if this factor better accounts for the emergence of ADHD symptoms or can be a part of late-onset ADHD presentation in cases exhibiting ADHD symptoms prior to the onset of this environmental factor. For suspected late-onset cases that present with no evidence of childhood ADHD, those who endorse this subtheme may be conceptually similar to those with Adjustment Disorder because an environmental stressor elicits an increase in symptoms. DSM-5 (American Psychiatric Association, 2013) considers different presentation styles of Adjustment Disorder—our findings indicate potentially broadening these presentation styles to also incorporate attention, hyperactivity, and impulsivity symptoms.

Our analyses also highlight the importance of considering the introduction of functional domains not experienced until after childhood (e.g., driving). For cases without childhood onset, the emergence of new responsibilities in adolescence and adulthood may account for the late onset of ADHD symptoms. In terms of treatment implications, cognitive-behavioral therapy techniques demonstrated to be efficacious in adults with ADHD (Knouse, Teller, & Brooks, 2017) could be taught in a targeted, situationally-specific way for these restricted phenotype cases. Alternatively, these individuals may manage their ADHD symptoms by seeking out environments that minimize the maladaptive impact of symptoms, such as occupational settings that allow for frequent physical movement.

Limitations and Future Directions

Future studies should consider limitations not already identified. First, additional contextual factors not identified in this study influence the expression of ADHD across development, such as sleep (Lunsford-Avery & Kollins, 2018). Second, despite being a well-characterized longitudinal sample previously assessed for late-onset ADHD and subjected to an in-depth qualitative assessment, the sample for this exploratory analysis was small. Future studies are needed in a larger sample with assessments that specifically probe for context identified in this study and assess whether these contextual factors are unique to suspected late-onset cases. Third, the larger MTA qualitative study oversampled those with a history of persistent substance use. Although only four out of 14 participants in our sample had late-onset ADHD previously ruled out based on substance use in another analysis (Sibley et al., 2017), this may limit generalizability. Fourth, the current sample was predominantly male. However, the female:male ratio is higher in adult-onset ADHD groups than childhood-onset ADHD (Agnew-Blais et al., 2016; Caye et al., 2016; Moffitt et al., 2015), we may not have identified contextual factors more applicable to females. Finally, some of the contextual factors overlap and are not mutually exclusive. For example, internal stress identified in Theme 5 may be the result of increased environmental demands in Theme 4.

Conclusions

We integrated qualitative methods with traditional quantitative assessments to identify contextual factors that may delay identification of ADHD in childhood and inform why ADHD symptoms could emerge in adolescence or adulthood among suspected late-onset cases. We conducted a fine-grained qualitative analysis of contextual factors that traditional, standardized assessments typically do not address in a unique sample of longitudinally-assessed individuals previously assessed for late-onset ADHD. The contextual factors identified in this study can be used to aid confirmation or disconfirmation of a late-onset ADHD diagnosis. Although these findings do not address the validity of late-onset ADHD, they provide guidance for future large-scale studies by systematically identifying contextual factors that should be considered in assessments for suspected late-onset cases. Consideration of these factors, along with full DSM criteria, is needed to address the ongoing discussion about late-onset ADHD.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements:

The Multimodal Treatment Study of Children with ADHD (MTA) was a National Institute of Mental Health (NIMH) cooperative agreement randomized clinical trial, continued under an NIMH contract as a follow-up study and finally under a National Institute on Drug Abuse (NIDA) contract. Collaborators from NIMH: Benedetto Vitiello, M.D. (Child & Adolescent Treatment and Preventive Interventions Research Branch), Joanne B. Severe, M.S. (Clinical Trials Operations and Biostatistics Unit, Division of Services and Intervention Research), Peter S. Jensen, M.D. (currently at the REACH Institute and the University of Arkansas for Medical Sciences), L. Eugene Arnold, M.D., M.Ed. (currently at Ohio State University), Kimberly Hoagwood, Ph.D. (currently at NYU); previous contributors from NIMH to the early phases: John Richters, Ph.D. (currently at National Institute of Nursing Research); Donald Vereen, M.D. (currently at NIDA). Principal investigators and co-investigators from the sites are: University of California, Berkeley/San Francisco: Stephen P. Hinshaw, Ph.D. (Berkeley), Glen R. Elliott, Ph.D., M.D. (San Francisco); Duke University: Karen C. Wells, Ph.D., Jeffery N. Epstein, Ph.D. (currently at Cincinnati Children's Hospital Medical Center), Desiree Murray, Ph.D.; previous Duke contributors to early phases: C. Keith Conners, Ph.D. (former PI); John March, M.D., M.P.H.; University of California, Irvine: James Swanson, Ph.D., Timothy Wigal, Ph.D.; previous contributor from UCLA to the early phases: Dennis P. Cantwell, M.D. (deceased); New York University School of Medicine: Howard B. Abikoff, Ph.D.; Montreal Children's Hospital/ McGill University: Lily Hechtman, M.D.; New York State Psychiatric Institute/Columbia University/Mount Sinai Medical Center: Laurence L. Greenhill, M.D. (Columbia), Jeffrey H. Newcorn, M.D. (Mount Sinai School of Medicine). University of Pittsburgh: Brooke Molina, Ph.D., Betsy Hoza, Ph.D. (currently at University of Vermont), William E. Pelham, Ph.D. (PI for early phases, currently at Florida International University). Follow-up phase statistical collaborators: Robert D. Gibbons, Ph.D. (University of Illinois, Chicago); Sue Marcus, Ph.D. (Mt. Sinai College of Medicine); Kwan Hur, Ph.D. (University of Illinois, Chicago). Original study statistical and design consultant: Helena C. Kraemer, Ph.D. (Stanford University). Collaborator from the Office of Special Education Programs/US Department of Education: Thomas Hanley, Ed.D. Collaborator from Office of Juvenile Justice and Delinquency Prevention/Department of Justice: Karen Stern, Ph.D. Additional investigators involved in Qualitative Interviewing Substudy: Thomas S.Weisner, Ph.D., & Jeffrey Good, UCLA.

The work reported was supported by cooperative agreement grants and contracts from NIMH and the National Institute on Drug Abuse (NIDA) to the following: University of California–Berkeley: U01 MH50461, N01MH12009, HHSN271200800005-C and DA-8-5550; Duke University: U01 MH50477, N01MH12012, HHSN271200800009-C, and DA-8-5554; University of California– Irvine: U01MH50440,N01MH1201, HHSN271200800006- C, and DA-8-5551; Research Foundation for Mental Hygiene (New York State Psychiatric Institute/Columbia University): U01 MH50467, N01 MH12007, HHSN271200800007-C, and DA-8-5552; Long Island–Jewish Medical Center U01 MH50453; New York University: N01MH 12004, HHSN271200800004-C, and DA-8-5549; University of Pittsburgh: U01 MH50467, N01 MH 12010, DA039881, HHSN271200800008-C, and DA-8-5553; and McGill University N01MH12008, HHSN271200800003-C, and DA-8-5548. Additional funding support provided by NIDA (R01DA039881 to B.S.G.M.).

Conflict of Interest Disclosures:

J.T.M. consulted with Avanir. M.H.S. consulted with Takeda. L.E.A. received research funding from Curemark, Forest, Lilly, Neuropharm, Novartis, Noven, Roche/Genentech, Shire, Supernus, and YoungLiving and consulted with or was on advisory boards for Gowlings, Neuropharm, Novartis, Noven, Organon, Otsuka, Pfizer, Roche, Seaside Therapeutics, Sigma Tau, Shire, and Tris Pharma and received travel support from Noven. J.M.S. acknowledges research support, advisory board/speaker's bureau and/or consulting for Alza, Richwood, Shire, Celgene, Novartis, Celltech, Gliatech, Cephalon, Watson, CIBA, UCB, Janssen, McNeil and Lilly. L.H. received research support, served on advisory boards and was speaker for Eli Lilly, Glaxo/Smith/Kline, Ortho Janssen, Purdue, Shire and Ironshore. P.S.J. consults with Shire/Takeda, Inc. Other authors have no disclosures.

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Table 1.

Themes and subthemes of factors involving expression of ADHD in childhood (Themes 1–3) or post-childhood (Themes 4–5)

Themes and Subthemes	Endorsement Rate % (*N*)
Childhood	
Theme 1: External factors that may have attenuated ADHD symptoms or impairment	93% (13)
Supportive adults	64% (9)
Another family member more severe	36% (5)
Non-traditional school placement	36% (5)
Unofficial supportive classes	29% (4)
Official supportive classes	21% (3)
Familial ADHD	21% (3)
Received psychosocial treatment strategies that did not explicitly target ADHD but may have improved ADHD symptoms	21% (3)
Theme 2: Internal factors that may have attenuated ADHD symptoms or impairment	71% (10)
Child's strengths	64% (9)
Non-disruptive behavior	43% (6)
Mild impairment	14% (2)
Theme 3: Other factors that may have reduced the likelihood of identifying ADHD in childhood	57% (8)
Other concerns overshadowed ADHD (e.g., trauma exposure)	57% (8)
Negative or dismissive attitudes towards ADHD or ADHD treatment	21% (3)
Lack of parental engagement	21% (3)
Restrictions to seeking mental health services	14% (2)
Post-Childhood	
Theme 4: External factors that may have accompanied increase in ADHD symptoms post-childhood	43% (6)
Increases in environmental demands	29% (4)
Chaotic or abusive home environment	21% (3)
Theme 5: Internal factors that may have accompanied increase in ADHD symptoms post-childhood	71% (10)
Other psychiatric concerns or substance use	71% (10)
Perceived stress	14% (2)
Neurocognitive severity worsened post-childhood for no identifiable reason	14% (2)