

A Preliminary Evaluation of Daily and Momentary Variability in Parenting Practices During Adolescent Alcohol Use and Co-Occurring Disorders Treatment

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Abstract

Background: Adolescents with co-occurring alcohol use and mental health disorders have better treatment outcomes when caregivers are involved in their treatment. Currently, little is known about why caregiver involvement improves outcomes.

Objectives: To facilitate caregiver-involved treatment process research, this study preliminarily examined within- and between-person variability in ecological momentary assessment (EMA) items assessing caregiver-child communication (eg, warmth, conflict), general (eg, monitoring, praise), and substance-specific parenting practices (eg, alcohol reactions and communication), and their correlations with momentary treatment targets (eg, craving, affect, motivation).

Design: Fifteen adolescent (*M*_{age} = 15.8, range = 13-18, 73.3% male, 73.3% White, 13.3% American Indian or Alaskan Native) and caregiver (*M*_{age} = 49.9, 86.7% biological/adoptive mothers) dyads were recruited from an adolescent co-occurring disorders intensive outpatient program. Dyads completed 7 consecutive weeks of EMA, which consisted of morning and random (4x/day) assessments.

Methods: Intraclass correlation coefficients (ICCs) examined the magnitude of between- and within-person variability for each item, which were administered to adolescents and caregivers. Within-person correlations examined how parenting practices related to alcohol and cannabis use and intentions, treatment motivation and engagement, and mental health symptoms (morning reports) and alcohol and cannabis craving and positive and negative affect (random assessments).

Results: Within-person variability exceeded 20% for all parenting items other than parental reactions to alcohol use. Whereas some items demonstrated patterns consistent with study hypotheses (eg, caregiver warmth was associated with lower alcohol craving and negative affect), others had correlations in the opposite direction of study hypotheses (eg, adolescent disclosure and parental solicitation were positively associated with cannabis intentions).

Conclusion: Findings indicate that parenting practices vary across days and moments and are cross-sectionally associated with momentary indicators of treatment outcomes. Future work continuing to develop and test the psychometric properties of daily and momentary parenting practices will be essential for examining caregiver behaviors during treatment that facilitate improved treatment outcomes.

Keywords

adolescence, alcohol use disorder, treatment, ecological momentary assessment, parenting, item development

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Introduction

Roughly 775 000 adolescents in the United States between the ages of 12 to 17 have an alcohol use disorder (AUD).¹ The vast majority (>80%) of adolescents presenting for AUD treatment have a co-occurring mental health diagnosis (COD),^{2,3} which is associated with poorer treatment outcomes.⁴⁻⁶ In line with findings for mental health disorder treatments,⁷ caregiver-involved treatments for adolescent AUD and CODs are associated with the best outcomes.^{8,9}

Despite evidence that caregiver-involved interventions result in superior outcomes, our understanding of why

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caregiver-involved interventions for AUD and CODs result in superior outcomes remains at a nascent stage.^{10,11} Examining what caregivers are doing during treatment requires measures of parenting practices that assess daily and momentary parenting behaviors. Accordingly, the current study preliminarily examines within- (ie, across moments and days) and between-person (ie, across participants) variability in ecological momentary assessment items of parenting behaviors (eg, communication, general parenting practices, and substance-specific parenting practices) captured during AUD and COD treatment.

Caregiver-involvement and Treatment Outcomes

As non-biological parents (eg, grandparents, stepparents) can serve as caregivers for youth, we use the term caregivers rather than parents throughout this manuscript. Multiple evidence-based treatments (eg, family therapies, adolescent community reinforcement approach) involve caregivers in treatment.^{12,13} Caregiver involvement is associated with increased adolescent treatment engagement, motivation, and outcomes,^{7,14–18} and reduced co-occurring mental health symptoms during AUD treatment.^{19–22} Common parenting targets in caregiver-involved treatments include: caregiver-child communication – the frequency and/or quality of communication between an adolescent and their caregiver, general parenting practices such as monitoring – caregiver behaviors that seek to acquire information about a youth's activities and life (eg, whereabouts, companions, events, stressors, behaviors), and substance-specific parenting practices such as alcohol specific communication – the frequency and/or quality of communication between an adolescent and their caregiver,²³ which have all been associated with reduced adolescent alcohol use.^{24–27} Consequently, current guidelines identify caregiver-involved adolescent AUD+COD treatment as a best practice.²⁸

Minimal research has examined what caregivers are doing during treatment to promote improved outcomes.²⁹ Only a handful of studies have examined caregiving behaviors as mediators of adolescent substance use treatment outcomes for a review see Meisel et al,¹¹ and only one assessed caregiving during treatment.³⁰ This study, like all existing caregiver-involved AUD and COD research, used caregiving measures spaced months apart that aggregate caregiving behaviors over long intervals (eg, weeks, months).³¹

The Need for Moment-level Caregiving Assessments

Dynamic system theory posits that long-term adjustment, such as recovery for an AUD and COD, is a function of the momentary interpersonal dynamics (ie, reciprocal interaction system) between a caregiver and their teenage child.^{32,33} During treatment, the introduction and practice of skills should help facilitate new, more adaptive, momentary interaction patterns. A growing body of work from developmental science, rooted in dynamic systems theory, supports the importance of assessing parenting practices at a more refined timescale.^{34,35} Consistent with dynamic systems

theory, parenting practices in community samples vary day-to-day and moment-to-moment³⁶ and the association between parenting practices (ie, conflict) and adolescent adjustment differs in magnitude and direction across different timescales ranging from daily to 3-month associations.³⁷ This finding suggests that capturing caregiver practices and adolescent AUD and COD outcomes across wide time courses (eg, monthly) may not reflect how daily and momentary parenting practices relate to adjustment during AUD and COD treatment.

To date, intensive longitudinal assessments of parenting behaviors have predominantly focused on parental communication (eg, warmth, conflict). These studies, in non-treatment, community samples of adolescents, have found measures of parental communication to be reliable and to demonstrate effects with indicators of adolescent adjustment, particularly affect for example, Boele et al,³⁴ Janssen et al,³⁶ and Fosco and LoBraico,³⁸ In contrast, few intensive longitudinal studies have assessed general parenting practices, such as monitoring, and substance-specific parenting.³⁹

The Current Study

Understanding the specific practices that caregivers do during treatment that facilitate improved treatment outcomes for adolescents with AUDs and CODs requires developing and evaluating measures of parenting practices associated with substance use and co-occurring symptoms that are also targets of caregiver-involved treatments. To facilitate this effort, the aims of the current study were to preliminarily examine: (1) whether daily and momentary assessments of parenting behaviors demonstrate within-person variability (ie, fluctuate day to day or moment to moment), and (2) how daily and momentary parenting behaviors correlate with daily (ie, substance use intentions, treatment engagement and motivation, mental health symptoms, and substance use) and momentary (substance use craving, positive and negative affect) indicators of long-term treatment outcomes at the within-person level (see Table 1 for hypotheses). Given high rates of polysubstance use, particularly cannabis use, among adolescents with AUDs,⁴⁰ both alcohol and cannabis specific parenting practices were assessed in the current study.

Methods

Participants

Participants were 15 adolescent-caregiver dyads. Eligible adolescents were (1) between the ages of 13 and 18, (2) met the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, diagnostic criteria for an AUD, and (3) had a caregiver willing to participate in the study. Adolescents and their caregivers were excluded if either could not read or comprehend study materials in English and if the teen had an active psychotic disorder. Participants were recruited from an intensive outpatient program for 13 to 18-year-olds with co-occurring disorders at a child and adolescent psychiatric hospital in the Northeastern United States from

Table 1. List of Constructs and Their Expected Correlations With Outcomes.

Morning reports																			
Construct: Item	Alcohol intentions		Cannabis intentions		Treatment motivation		Treatment engagement		Internalizing symptoms		Externalizing symptoms		Alcohol use		Cannabis use		Empirical and theoretical justification		
	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR			
Caregiver-child communication																			
Time communicating	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	41,42		
Conflict	+	+	+	+	-	-	-	-	+	+	+	+	+	+	+	+	26		
General parenting practices																			
Knowledge	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	25,26		
Disclosure	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	25,26		
Solicitation	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	25,26		
Substance specific parenting practices																			
Alcohol-specific reactions	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	26		
Cannabis-specific reactions	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	26,43		
Random prompts																			
Construct: Item	Alcohol craving		Cannabis craving		Negative affect		Positive affect												
	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR			
Caregiver-child communication																			
Warmth-caregiver	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	44,45		
Dominance – caregiver	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	44,45		
Warmth-adolescent	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	44,45		
Dominance – adolescent	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	44,45		
Conflict	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-			
General parenting practices																			
Knowledge	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	25,26		
Positive parenting	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	46		
Substance specific parenting practices																			
Alcohol-specific communication	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	26		
Cannabis-specific communication	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	43,47		

Abbreviations: +, hypothesized position correlation; -, hypothesized negative correlation; AR, adolescent report; CR, caregiver report.

2023 to 2024. Adolescents were 15.8 years old on average ($range=13-18$), 73.3% male (gender identity mirrored biological sex), 73.3% White, 13.3% American Indian or Alaskan Native, 6.7% Black, and 6.7% Latine. Fourteen of the fifteen adolescents (93.3%) also reported using cannabis. Fifteen percent of adolescents reported receiving prior treatment for their alcohol use, and 38% reported receiving prior treatment for a substance other than alcohol. Adolescents reported that their goals for their alcohol use were to cut down but not stop completely (33.3%), temporary abstinence (16.7%), abstinence (16.7%), and 33.3% reported having no goal for their drinking. On average, caregivers were 49.9 years old ($range=36-57$), 86.7% were female sex and mothers, 6.8% were fathers, and 6.8% were grandmothers. The average family household income was \$50 000 to \$74 999, with 13.3% reporting an income <\$14 000, 20% reporting an income range from \$50 000 to \$74 999, and 66.7% reporting an income >\$100 000. Caregivers reported that their child's participation in the Vista program was made by them (40.0%), they were referred by another treatment program (40.0%), their child was court-ordered (6.7%), or the child (6.7%).

Procedure

Trained research assistants approached newly enrolled adolescents and their caregivers and provided them with an overview of the study, answered questions from the adolescent or their caregiver, and provided flyers with more detailed information regarding the study. Interested adolescent-caregiver dyads were scheduled for a baseline study visit as close as possible to the beginning of treatment. The baseline visit was virtual, taking place on Health Insurance Portability and Accountability Act-compliant Zoom. During the baseline visit, dyads completed written assent, consent, and parental permission procedures when the adolescent was <18 and consent procedures when the adolescent was 18. Then, adolescents and their caregivers completed formal eligibility assessments. After determining eligibility, eligible dyads were trained in EMA procedures. Adolescent and caregiver dyads completed 7 consecutive weeks of EMA. All procedures were approved by the Lifespan Hospital institutional review board. (Approval number: 403022; approved August 18, 2022).

EMA Procedures

Dyads completed 2 EMA report types each day during the study: (1) Morning reports surveys, which were interval-contingent recordings whereby adolescents and caregivers answered questions each morning about parenting practices, adolescent internalizing and externalizing symptoms, as well as adolescent past-day alcohol, cannabis, and other substance use. Morning reports were available each day from 4:00am to 11:59pm. If a participant did not complete a morning report, they were sent push notifications at 11am and 3pm reminding them to complete their morning report. Participants received a text message each day at 6:30pm asking them to complete their morning report if it

had not yet been completed. Morning, rather than evening, reports were selected to reduce substance use recall bias, as most substance use during adolescence, particularly alcohol, occurs in the evening.^{48,49} (2) Signal-contingent reports (ie, random assessments) occurred within four 3-hour and 45-minute time blocks throughout the day (8am-11:05pm). There were 15-minute gaps between time blocks to ensure participants did not receive random assessments in very close proximity to each other. Dyad members received random assessments at the exact same moment each day and had 30 minutes to complete each survey. This yielded 4 random assessments per day. Participants were sent push notifications after 10 minutes and text messages after 20 minutes, reminding them to complete their random assessment. All EMA surveys were completed in the Catalyst mobile application (MetricWire Inc.). EMA items across adolescents and caregivers were not linked such that adolescent responses were unconnected to the items caregivers received and vice versa.

Study Compensation

Adolescents and caregivers were each compensated \$30 for the baseline study visit. During the EMA period, participants were compensated \$5 per day when they completed 3 or more surveys. Each week participants completed $\geq 80\%$ of their surveys they earned a \$10 bonus.

Intensive Outpatient Program Treatment Components

The intensive outpatient program, Vista, is a Substance Abuse and Mental Health Services Administration recognized program for adolescents with co-occurring conditions.³ The program takes place 3 days a week for 3 hours each day from 3 to 6pm. Vista includes multiple program components which include: (1) medication management from a psychiatrist or psychiatric nurse practitioner, (2) at least twice weekly individual therapy from clinical and counseling psychological trainees completing their doctoral internship, postdoctoral fellows, or licensed psychologists, (3) at least 1 hour of family therapy per week, and (4) group therapy when adolescents are not meeting with their medication provider, in individual, or family therapy. The program is rooted in cognitive behavioral therapies, incorporating principles from cognitive behavior therapy, dialectical behavior therapy, acceptance and commitment therapy, and motivational interviewing. Family therapy focused on teaching interpersonal skills to improve adolescent-caregiver relationships as well as parenting practices to facilitate substance use and mental health recovery (eg, praise, parental monitoring, substance-specific rules, and communication).

Measures

The items for all constructs described in the measures section can be seen in Table 2 (morning report items) and Table 3 (random prompt items).

Table 2. Descriptive Statistics for Morning Report Parenting Variables.

Construct: Item	Item development process	Response options	Adolescent report			Caregiver report		
			n	M	SD	n	M	SD
Caregiver-child communication Time Communicating: How much time did you and your parent/caregiver spend communicating (in person, over the phone, text-messaging, social media) yesterday? Conflict: How much did you and your parent/caregiver argue, disagree, or get upset with each other yesterday? General parenting practices Knowledge: Yesterday, your parent/caregiver knew (check all that apply)	Developed for the current study.	0 = None 1 = A few minutes 2 = 10-15 min 3 = 20-30min 4 = 1h 5 = 2h 6 = 3h or more	374	3.59	2.31	617	4.61	1.35
		0 – Not at all 1 – A little 2 – Somewhat 3 – Very much 4 – Extremely	374	0.23	0.58	617	0.37	0.62
	Developed for the current study. Adaptation of a measure of parental monitoring by Kerr and Stattin ⁵⁰ (2000) that was not designed for intensive longitudinal research.	1 = About how you are doing with your friends 2 = How you are doing in school or activities 3 = What you did during your free time 4 = What homework/papers/tests you had 5 = Where and what you did after school 6 = What you watched on TV or the internet (eg, YouTube) 7 = What you did online (video games, IM, websites) 8 = What you did on social media 9 = Who you talked to (including online, phone, text) 10 = About your substance use Overall average	373	0.23	0.42	617	0.389	0.488
			373	0.20	0.40	617	0.310	0.463
			373	0.19	0.39	617	0.583	0.493
			373	0.09	0.29	617	0.104	0.305
			373	0.09	0.30	617	0.276	0.447
			373	0.03	0.18	617	0.058	0.235
			373	0.03	0.17	617	0.076	0.265
			373	0.02	0.13	617	0.034	0.181
			373	0.05	0.22	617	0.122	0.327
			373	0.05	0.21	617	0.250	0.433
	373	0.10	0.13	617	0.220	0.153		
Disclosure: Yesterday, you told your parent/caregiver without them asking (check all that apply)	Developed for the current study. Adaptation of a measure of parental monitoring by Kerr and Stattin ⁵⁰ (2000) that was not designed for intensive longitudinal research.	1 = About how you are doing with your friends 2 = How you are doing in school or activities 3 = What you did during your free time 4 = What homework/papers/tests you had 5 = Where and what you did after school 6 = What you watched on TV or the internet (eg, YouTube) 7 = What you did online (video games, IM, websites) 8 = What you did on social media 9 = Who you talked to (including online, phone, text) 10 = About your substance use Overall average	372	0.16	0.37	616	0.28	0.45
			372	0.06	0.24	616	0.13	0.34
			372	0.12	0.32	616	0.23	0.42
			372	0.06	0.24	616	0.06	0.24
			372	0.06	0.23	616	0.08	0.27
			372	0.05	0.21	616	0.07	0.26
			372	0.02	0.14	616	0.06	0.24
			372	0.01	0.12	616	0.03	0.16
			372	0.05	0.22	616	0.08	0.28
			372	0.02	0.14	616	0.09	0.29
		372	0.06	0.10	616	0.11	0.14	
	Solicitation: Yesterday, your parent/caregiver asked you (check all that apply)	Developed for the current study. Adaptation of a measure of parental monitoring by Kerr and Stattin ⁵⁰ (2000) that was not designed for intensive longitudinal research.	1 = About how you are doing with your friends 2 = How you are doing in school or activities 3 = What you did during your free time 4 = What homework/papers/tests you had 5 = Where and what you did after school 6 = What you watched on TV or the internet (eg, YouTube) 7 = What you did online (video games, IM, websites) 8 = What you did on social media 9 = Who you talked to (including online, phone, text) 10 = About your substance use Overall average	373	0.17	0.38	617	0.41
			373	0.13	0.33	617	0.28	0.45
			373	0.10	0.30	617	0.36	0.48
			373	0.11	0.31	617	0.16	0.37
			373	0.07	0.26	617	0.09	0.29
			373	0.01	0.13	617	0.06	0.23
			373	0.02	0.14	617	0.07	0.26
			373	0.03	0.16	617	0.03	0.18
			373	0.02	0.14	617	0.11	0.31
			373	0.03	0.18	617	0.20	0.40
	373	0.07	0.10	617	0.18	0.15		

(continued)

Table 2. (continued)

Construct: Item	Item development process	Response options	Adolescent report			Caregiver report		
			n	M	SD	n	M	SD
Substance specific parenting practices Alcohol-specific reactions: In response to my drinking yesterday, my parent/caregiver (check all that apply)	Developed for the current study. Adaptation of a measure of parental reactions to substance use by Kodl and Mermelstein ⁵¹ (2004) that was not designed for intensive longitudinal research.	1 = My caregiver did not know that I drank	15	0.73	0.46	—	—	—
		2 = Yelled at me in disapproval	15	0.00	0.00	9	0.22	0.44
		3 = Talked with me about why I shouldn't drink	15	0.13	0.35	9	0.67	0.50
		4 = Talked with me about why I drank alcohol	15	0.13	0.35	9	0.44	0.53
		5 = Talked with me about how my drinking made them feel	15	0.07	0.26	9	0.78	0.44
		6 = Took away privileges (eg, watching TV, grounding)	15	0.00	0.00	9	0.11	0.33
		7 = Grounded me	15	0.00	0.00	9	0.00	0.00
		8 = Gave me the silent treatment	15	0.00	0.00	9	0.00	0.00
		9 = Offered me a reward not to drink	15	0.00	0.00	9	0.00	0.00
		10 = Did nothing	15	0.13	0.35	9	0.11	0.33
Cannabis-specific reactions: In response to my marijuana use yesterday, my parent/caregiver (check all that apply)	Dichotomous reactions	1 = My caregiver did not know that I used marijuana	143	0.61	0.49	—	—	—
		2 = Yelled at me in disapproval	143	0.03	0.17	62	0.02	0.13
		3 = Talked with me about why I shouldn't use marijuana	143	0.02	0.14	62	0.45	0.50
		4 = Talked with me about why I used marijuana	143	0.01	0.08	62	0.26	0.44
		5 = Talked with me about how my marijuana use made them feel	143	0.00	0.00	62	0.23	0.42
		6 = Took away privileges (eg, watching TV, grounding)	143	0.01	0.08	62	0.10	0.30
		7 = Grounded me	143	0.00	0.00	62	0.05	0.22
		8 = Gave me the silent treatment	143	0.00	0.00	62	0.00	0.00
		9 = Offered me a reward not to use marijuana	143	0.00	0.00	62	0.03	0.18
		10 = Did nothing	143	0.44	0.50	62	0.39	0.49
		Dichotomous reactions	143	0.05	0.22	62	0.58	0.50

All listed items are adolescent reports of each construct. Caregiver items were identical, but were worded in the first person or referred to the child. As examples, "How much time did you and your child spend communicating (in person, over the phone, text-messaging, social media) yesterday?" and "Yesterday, your child told you without you asking (check all that apply)."

Table 3. Descriptive Statistics for Random Assessment Parenting Variables.

Construct: Item(s)	Item development process	Response options/scoring	Adolescent report		Caregiver report			
			n	M	SD	n	M	SD
Caregiver-child communication								
Warmth – caregiver: How did your parent/caregiver behave toward you during this interaction?	Validated EMA items ⁵⁶ for adults. Not yet examined in an adolescent population.	(–50) = Distant/Cold to 50 = Warm/Friendly	533	27.5	22.5	1077	26.2	16.8
Dominance – caregiver: How did your parent/caregiver behavior toward you during this interaction?		(–50) = Shy/Passive to 50 = Confident/Pushy	532	19.9	25.8	1003	13.7	16.1
Warmth – adolescent: How did you behave toward your parent/caregiver during this interaction?		(–50) = Distant/Cold to 50 = Warm/Friendly	532	28.7	20.1	1078	21.7	20.9
Dominance – adolescent: How did you behave toward your parent/caregiver during this interaction?		(–50) = Shy/Passive to 50 = Confident/Pushy	531	17.5	26.3	1004	13.5	18.2
Conflict: Since your last report, your caregiver (1) criticized you, (2) was annoyed by you, and (3) you and your caregiver disagreed.		0 (strongly disagree) to 100 (strongly agree)	532	11.1	19.6	1078	12.9	18.0
General parenting practices								
Knowledge: My caregiver knows where I am right now.	Developed for the current study.	0 (strongly disagree) to 100 (strongly agree)	799	88.7	24.6	369	81.5	17.8
Positive parenting: Since your last report, has your parent/caregiver (check all that apply)	Developed for the current study.	1 = Told you that you did a good job	799	0.22	0.41	1446	0.21	0.21
		2 = Hugged or kissed you	799	0.20	0.40	1446	0.22	0.42
		3 = Rewarded or gave you something extra	799	0.01	0.11	1446	0.03	0.16
		4 = None of the above	799	0.73	0.44	1446	0.62	0.49
		Average Positive Parenting	799	0.14	0.25	1446	0.15	0.22
Substance specific parenting practices								
Alcohol-specific communication: Since your last report, did your parent/caregiver talk to you about (check all that apply)	Developed for the current study. Adaptation of a measure of substance specific communication by Emmett et al ⁶⁰ (2001) that was not designed for intensive longitudinal research.	1 = Not drinking alcohol	799	0.11	0.32	1446	0.06	0.24
		2 = How to resist pressure to drink alcohol	799	0.003	0.06	1446	0.01	0.09
		3 = Rules about drinking alcohol	799	0.03	0.16	1446	0.01	0.11
		4 = Discipline about alcohol	799	0.01	0.09	1446	0.003	0.05
		5 = Encouraged you not to drink alcohol	799	0.10	0.30	1446	0.04	0.20
		6 = Encouraged you to use a skill to not drink	799	0.001	0.04	1446	0.01	0.12
		7 = None of the above	799	0.86	0.35	1446	0.92	0.27
Average	799	0.04	0.11	1446	0.02	0.09		
Cannabis-specific communication: Since your last report, did you parent/caregiver talk to you about (check all that apply)		1 = Not using marijuana	799	0.01	0.07	1445	0.08	0.27
		2 = How to resist pressure to use marijuana	799	0.002	0.05	1445	0.02	0.13
		3 = Rules about using marijuana	799	0.12	0.32	1445	0.03	0.18
		4 = Discipline about marijuana	799	0.01	0.09	1445	0.01	0.11
		5 = Encouraged you not to use marijuana	799	0.01	0.09	1445	0.05	0.23
		6 = Encouraged you to use a skill to not use marijuana	799	0.001	0.04	1445	0.03	0.18
		7 = None of the above	799	0.87	0.34	1445	0.88	0.33
Average	799	0.02	0.06	1445	0.04	0.12		

All listed items are adolescent reports of each construct. Caregiver items were identical but were worded in the first person or referred to the child. As examples, “How did you behave toward you during this interaction?” and “Since your last report, did you talk to your child about (check all that apply).”

Morning Reports

Communication Quantity (Adolescent and Caregiver Report). Adolescents and caregivers were each asked how much time they spent communicating with each other, in person, on the phone, or via messaging the prior day, on a 7-point Likert-scale (0 = none to 6 = 3 hours or more).

Conflict (Adolescent and Caregiver Report). Adolescents and caregivers were each asked how much they argued, disagreed, or got upset with each other the prior day. Responses were on a 5-point Likert-Scale ranging from 0 (not at all) to 4 (extremely).

Monitoring (Adolescent and Caregiver Report). Parental monitoring refers to the actions taken by caregivers to supervise and maintain awareness of their adolescent's interpersonal functioning, school performance, and whereabouts.⁵² Monitoring reflects caregivers' knowledge of their adolescent's behaviors and relationships as well as the means by which parents learn about their adolescent's behavior.^{50,52} Sources of parental knowledge include parental solicitation (ie, asking adolescent or other parents questions to obtain information) and child disclosure (ie, adolescent's sharing information). In line with conceptualizations of parental monitoring that differentiate between knowledge and the means by which caregivers obtain this knowledge, adolescents and caregivers were asked if caregivers knew about (ie, knowledge), if caregivers asked about (ie, solicitation), or if adolescents told their caregivers about (ie, disclosure) a range of behaviors including school activities, homework/papers/tests, social media activities, and substance use. Behaviors were selected from prior monitoring measures⁵⁰ and additional behaviors were written to reflect current activities adolescents regularly engage in (eg, social media). An overall average of the 10 response options were computed for knowledge, disclosure, and solicitation.

Parental Reactions to Substance Use (Adolescent and Caregiver Report). Parental reactions to substance use refer to the specific strategies caregivers employ in response to their child's substance use, which may include discussions of the dangers of substance use and enforcing rules about substance use.⁵³ On days when adolescents reported using alcohol or cannabis the prior day, and days when caregivers reported that their child used alcohol or cannabis the prior, they were asked to select how caregivers responded to their use. Response options were taken from existing measures of parental reactions to substance use,⁵¹ and example response options were "Yelled at me in disapproval," "Talked with me about why I used," "Took away privileges," and "Gave me the silent treatment" (see Table 2 for a complete list of response options). Given low levels of alcohol and cannabis use days coupled with the vast majority of adolescent responses being that their caregiver did not know they used the prior day, there was minimal endorsement of these items. Accordingly, dichotomous variables were created reflecting whether a caregiver had any reaction to their child's alcohol use or any reactions to their child's cannabis use, where participants received a

score of 1 if they endorsed any reaction other than their caregiver did not know (adolescent report) and their caregiver did nothing (adolescent and caregiver report).

Intentions (Adolescent Report). Alcohol and cannabis use intentions were assessed using the items "Do you plan to drink today?" and "Do you plan to use marijuana today?"⁵⁴ Response options included no (0), yes (1), and unsure (2). Dichotomous variables were created based on these response options to reflect no intention to use (0) versus unsure of or planning to use (1) for alcohol and cannabis.

Treatment Motivation and Engagement (Adolescent Report). Adolescents were asked "How motivated are you to attend and participate in treatment?" and "How engaged are you in treatment?" The motivation item was answered on a sliding scale from 1 (not at all) to 10 (extremely) and the engagement item on a sliding scale from 1 (not engaged) to 10 (extremely engaged).

Mental Health Symptoms (Adolescent Report). Daily internalizing and externalizing symptoms were measured using 16 items developed by Wright et al.⁵⁵ The internalizing (eg, "I felt anxious yesterday," "I was not interested in doing much of anything yesterday") and externalizing scales (eg, "I did something on impulse yesterday," "I acted aggressively towards someone yesterday") contain 7 and 9 items, respectively, and questions are answered on a Likert-scale ranging from 0 (not at all) to 7 (very much). Both the internalizing ($\omega = .88$) and externalizing scale ($\omega = .89$) demonstrated good internal consistencies.

Random Assessments

Interpersonal Warmth and Dominance (Adolescent and Caregiver Report). The Visual Interpersonal Analog Scale⁵⁶ was used to capture how warm and dominant adolescent-caregiver dyads acted toward each other. When an adolescent or caregiver endorsed interacting with each other since the last random assessment in person, by phone, text, video chat, or messaging/social media, they were asked how warmly (−50 = distant/cold to 50 = warm/friendly) and dominantly (−50 = shy/passive to 50 = confident/pushy) they and the other dyad member acted toward each other during the interaction. Anchors were modified from Woods et al.⁵⁶ to ensure they were developmentally appropriate for adolescents.

Conflict (Adolescent and Caregiver Report). Three items from the Momentary Parent-Child Interaction questionnaire assessed caregiver-adolescent conflict.⁵⁷ Items assessed whether the caregiver had criticized, been annoyed by, or disagreed with the adolescent since the last prompt. These items were only administered when the caregiver or teen endorsed interacting with each other since the last random assessment. Three of the original five items, with the highest factor loadings, were selected to balance overall random assessment length with being able to estimate latent variables for key constructs. All items were answered on a visual analog scale ranging from 0 (strongly disagree) to

100 (strongly agree). The internal consistencies for adolescent ($\omega = .88$) and caregiver ($\omega = .81$) reports were good.

Monitoring (Adolescent and Caregiver Report). Despite calls for momentary assessments of parental monitoring, no existing momentary measures of monitoring exist and existing scales use item wording or response options that are not suitable for assessing momentary processes.^{24,58} A single item was created to examine parental knowledge, a component of monitoring, which asked adolescents and caregivers if caregivers knew where the teen was at the current moment (0 = strongly disagree to 100 = strongly agree).

Positive Parenting (Adolescent and Caregiver Report). Positive parenting includes behaviors such as praise, demonstrating affection, and rewarding desirable behaviors.⁵⁹ When reporting having an interaction since their last random assessment, participants were asked if caregivers told the adolescent they did a good job, hugged or kissed them, rewarded them, or none of the above. Participants were asked to select each behavior the caregiver engaged in since the last prompt. The 3 dichotomous items were averaged to form a composite positive parenting indicator.

Substance Specific Communication (Adolescent and Caregiver Report). Alcohol and cannabis communication were assessed using several items taken from Ennett et al.⁶⁰ Items from the original measure on communication to choose friends who do not drink and media portrayals of use were excluded to reduce the length of this item. Given the original measure was not designed for a treatment context or EMA, an additional item was added assessing communication about skill use encouragement, and rather than Likert-responses, participants could select each statement the caregivers stated since the last prompt. Each dichotomous response option was averaged to form composite alcohol-specific communication and cannabis-specific communication variables.

Craving (Adolescent Report). Consistent with prior EMA craving assessments, adolescents were asked how strong their urge was to drink and use marijuana on a sliding scale of 0 (no urge) to 10 strongest ever.⁶¹

Positive and Negative Affect (Adolescent Report). Positive affect was assessed using the items “happy,” “excited,” and “relaxed,” and negative affect was assessed using the items “angry,” “nervous,” and “sad.” Each question was answered on a sliding scale from 0 (not at all) to 100 (extremely). Positive ($\omega = .82$) and negative ($\omega = .82$) affect items were averaged to form composites.

Analytic Approach

All data preparation and statistical analyses were conducted in R version 4.5 R Core.⁶² All data and analytic code are available at the Open Science Framework (<https://osf.io/p8k3s>). Descriptive statistics (ie, mean, standard deviation) were calculated for all parenting behaviors for morning reports and random assessments. To examine variability in

the EMA items, intraclass correlation coefficients (ICCs) were calculated to partition variance into between-person and within-person variability. Lastly, adolescent and caregiver reports of parenting practices were correlated with alcohol and cannabis intentions, treatment motivation and engagement, mental health symptoms, and alcohol and cannabis use for morning reports and with alcohol and cannabis craving as well as positive and negative affect for random assessments. Predictor and outcome variables were person-mean centered to examine these correlations at the within-person level. Values of .12, .24, and .41 were defined as small, medium, and large correlation coefficient effect sizes, respectively.⁶³

Results

EMA Compliance

Adolescents completed 772 out of 1622 (47.6%) random prompts. Caregivers completed 1331 out of 1881 (70.8%) random prompts across the 7-week EMA period. Adolescent EMA data linearly declined by week with a large decrease in compliance between weeks 3 and 4. Adolescents completed 361 out of 651 (55.5%) morning reports and caregivers completed 601 out of 658 morning reports (91.3%). There was significant variability across adolescents ($M = 46.3\%$, $SD = 28.2\%$, $range = 2.5\% - 84.9\%$) and caregivers ($M = 76.5\%$, $SD = 15.7\%$, $range = 41.1\% - 93.9\%$) in their EMA compliance.

Descriptive Statistics

Item means, standard deviations, and number of responses are reported for each morning report and random assessment parenting question in Tables 2 and 3, respectively. Adolescents reported that they spoke to their caregiver between 20 and 30 minutes to 1 hour each day, on average, whereas caregivers reported that they spoke with their child 1 to 2 hours a day, on average. Morning reports of components of monitoring indicated that caregivers most often knew, adolescents most often disclosed, and caregivers most often asked about the adolescent's friendships (adolescent and caregiver reports). Endorsement of parental knowledge, adolescent disclosure, and caregiver solicitation was lowest for social media, substance use, and what teens watched on television or the internet. Given adolescents only reported 15 alcohol use episodes across the study, in total, there were very few observations for adolescent (15) and caregiver (9) reports of caregiver reactions to alcohol use. Further, per adolescent reports, the vast majority of the time they reported that their caregiver did not know about their alcohol use. There were 163 cannabis use episodes endorsed by adolescents leading to a higher number of opportunities to answer questions pertaining to caregiver reactions to cannabis use. Adolescents most often endorsed that their caregiver did not know about their cannabis use or did nothing in response to their cannabis use. The most common reactions endorsed by caregivers were talking about why their adolescent should not use cannabis, did nothing, and talked with their adolescent about why they used cannabis.

In random prompts, teens and caregivers reported that they tended to act warm and slightly dominant toward each other in interactions. Both adolescents and caregivers reported that caregivers knew where they were located, on average. Adolescents and caregivers both reported that praise and providing hugs or kisses were the most common parenting practices employed by caregivers. Overall, caregivers rarely spoke to their adolescents about alcohol or cannabis (adolescent and caregiver reports). The most common alcohol communication was caregivers telling their adolescent not to drink (adolescent and caregiver report). For cannabis, adolescents reported that their caregivers most often discussed rules about cannabis whereas caregivers reported that they most often communicated that their child should not use cannabis.

Between and Within-person Variability in Parenting Behaviors

Morning Reports. Overall, within-person variability (ie, variability due to day-to-day fluctuations in responses) exceeded 20% for all caregiver-child communication, general parenting, and substance specific-parenting items other than parental reactions to alcohol use (see Table 4). ICCs could not be computed for parental reactions to alcohol use due to the extremely rare endorsement of use in the sample. For every item, there was less within-person variability for adolescent relative to caregiver reports. For example, whereas only 22% of the variability in adolescent disclosure was at the within-person level for adolescent reports, 63% of the variability in adolescent disclosure was at the within-person level for caregiver reports of this item.

Table 4. Between- and within-person Variability in Morning Reports of Parenting Practices.

Construct: Item	Adolescent report		Caregiver report	
	Between	Within	Between	Within
Caregiver-child communication				
Time communicating	0.69	0.31	0.24	0.76
Conflict	0.32	0.68	0.23	0.77
General parenting practices				
Knowledge	0.53	0.47	0.28	0.72
Disclosure	0.78	0.22	0.37	0.63
Solicitation	0.47	0.53	0.30	0.70
Substance specific parenting practices				
Alcohol-specific reactions	—	—	—	—
Cannabis-specific reactions	0.75	0.25	0.66	0.34

There were an insufficient number of observations for the multilevel model to converge for alcohol-specific reactions.

Random Assessments. Overall, within-person variability (ie, variability due to momentary fluctuations in responses) exceeded 20% for all caregiver-child communication, general parenting, and substance specific-parenting items other than parental reactions to alcohol use (see Table 5). For caregiver-child communication and general parenting practices, there consistently was greater within-person

variability for caregiver- compared to adolescent-reports. For example, whereas adolescents perceived their caregiver's interpersonal warmth toward them as largely stable across time (ie, 70% of variability was at the between-person level), caregiver reports of their warmth toward their adolescent varied moment to moment (ie, 63% of the variability was the within-person level).

Table 5. Between- and within-person Variability in Random Assessments of Parenting Practices.

Construct	Adolescent report		Caregiver report	
	Between	Within	Between	Within
Caregiver-child communication				
Warmth – caregiver	0.60	0.40	0.36	0.64
Dominance – caregiver	0.59	0.41	0.47	0.53
Warmth – adolescent	0.70	0.30	0.33	0.67
Dominance – adolescent	0.59	0.41	0.37	0.63
Conflict	0.47	0.53	0.19	0.81
General parenting practices				
Knowledge	0.25	0.75	0.27	0.73
Positive parenting	0.70	0.30	0.36	0.64
Substance specific parenting practices				
Alcohol-specific communication	0.70	0.30	0.74	0.26
Cannabis-specific communication	0.56	0.44	0.64	0.36

Correlations With Core Treatment Targets

Morning Reports. Within-person correlations indicated that days caregiver reported greater time communicating than on average were significantly associated with less internalizing symptoms than on average (small effect), and days adolescents reported greater time communicating than on average were associated with less alcohol use than on average (small effect; see Table 6). Days when adolescents and caregivers reported greater conflict frequency than on average were associated with greater alcohol intentions (small effects), use (small effects), and externalizing symptoms than on average (medium and small effect). Days adolescents reported greater conflict frequency than on average were associated with greater internalizing symptoms than on average (small effect), and days caregivers reported greater conflict frequency than on average were associated with lower cannabis intentions than on average (small effect). Greater parental knowledge, disclosure, and solicitation than on average were associated with greater internalizing (small, medium, and small effects) and externalizing symptoms (small effects) than on average. Days when adolescents reported greater disclosure and solicitation than on average were associated with lower treatment engagement (small effects) and greater alcohol use (small effects) than on average. Greater caregiver solicitation of information from adolescents than on average was significantly associated with increased adolescent reports of cannabis intentions (small effect) and internalizing symptoms (small effect) than on average. There were no significant associations between caregiver alcohol reactions and momentary treatment targets. When adolescents reported their caregivers had more reactions to their cannabis use than on average, their treatment motivation and engagement was significantly lower than on average (small effects).

Random Assessments. Moments when adolescents reported that they and their caregiver were warmer than on average were significantly associated with lower momentary craving (medium and small effect) and negative affect (medium effects), and greater positive affect (small effects; see Table 7). Moments when caregivers reported that they and their adolescent were warmer than on average were significantly associated with lower momentary negative affect (small and medium effect), and greater momentary positive affect (small effects). When adolescents reported that they and their caregiver were more dominant in the moment than on average, they reported significantly lower cannabis craving than on average (small effects). Moments when adolescents and caregivers reported greater conflict than on average were associated with greater adolescent negative affect than on average (medium and small effect). Momentary adolescent reports of conflict were also significantly associated with greater momentary craving (small effect).

When adolescents and their caregivers reported that their caregiver knew where they were more than on average, this was associated with lower momentary adolescent alcohol craving (below small cutoff and small effect). Momentary adolescent-reported parental knowledge was also associated

Table 6. Within-person Correlations Between Daily Parenting Practices and Daily Indicators of Treatment Outcomes.

Construct: Item	Alcohol intentions		Cannabis intentions		Treatment motivation		Treatment engagement		Internalizing symptoms		Externalizing symptoms		Alcohol use		Cannabis use	
	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR	AR	CR
Caregiver-child communication																
Time communicating	-.05	-.04	-.08	-.04	.09	.09	.05	.02	-.01	-.15	-.02	-.08	-.13	-.06	-.05	.01
Conflict	.20	.12	.04	-.12	-.01	-.08	-.02	-.05	.22	.10	.27	.16	.15	.16	.003	-.04
General parenting practices																
Knowledge	-.06	-.10	-.06	.14	-.04	.04	-.08	.01	.23	.09	.12	-.01	-.02	-.05	.02	.09
Disclosure	.03	-.02	.12	.12	-.17	.0004	-.22	.02	.30	.11	.19	.001	.13	.04	.11	.08
Solicitation	-.05	.02	.06	.14	-.07	-.06	-.17	-.07	.19	.17	.12	.05	.12	-.01	.11	.07
Substance specific parenting practices																
Alcohol-specific reactions	.28	-	.24	-	.34	-	.43	-	-.01	-	-.09	-	.09	-	.19	-
Cannabis-specific reactions	-.13	.22	.12	.20	-.22	-.20	-.21	-.22	-.12	.31	-.03	-.08	.09	-.28	-.06	.07

Significant correlations are bolded. - = insignificant number of observations to estimate a correlation coefficient.

Table 7. Within-person Correlations Between Momentary Parenting Practices and Daily Indicators of Treatment Outcomes.

Construct: Item	Alcohol craving		Cannabis craving		Negative affect		Positive affect	
	AR	CR	AR	CR	AR	CR	AR	CR
Caregiver-child communication								
Warmth – caregiver	-.26	-.10	.02	-.03	-.28	-.18	.19	.14
Dominance – caregiver	.02	.05	-.13	.07	-.07	.03	.03	.06
Warmth – adolescent	-.12	-.08	-.02	-.10	-.25	-.25	.13	.17
Dominance – adolescent	-.05	.01	-.15	.06	-.07	.03	.03	.08
Conflict	.20	.05	.01	.03	.36	.20	-.05	-.12
General parenting practices								
Knowledge	-.08	-.20	.05	.01	-.16	-.11	-.04	.10
Positive parenting	.07	-.07	.05	.07	.13	.04	.11	.01
Substance specific parenting practices								
Alcohol-specific communication	.13	.16	-.04	-.20	.11	.04	.02	-.02
Cannabis-specific communication	.05	-.10	-.16	.08	.05	.01	-.002	.01

Significant correlations are bolded.

with lower negative affect (small effect). Moments when adolescents reported that their parents engaged in more positive parenting practices than on average were associated with greater momentary alcohol craving (below small effect cutoff), negative affect (small effect), and positive affect (below small effect cutoff).

Moments when adolescents and caregivers reported caregivers spoke more about alcohol to their adolescent than on average was associated with greater momentary craving than on average (small effects). Caregiver reports of alcohol-specific communication was associated with lower momentary adolescent cannabis craving (below small effect cutoff) and adolescent reports of alcohol-specific communication was associated with greater momentary negative affect (below small effect cutoff). When adolescents reported their caregiver spoke more about cannabis with them than on average was associated with lower momentary cannabis craving than on average (small effect). When caregivers reported they spoke with their adolescent more about cannabis than on average, their adolescent reported lower alcohol craving in the moment than on average (below small effect cutoff).

Discussion

To advance the science of studying caregiver behaviors during adolescent AUD and COD treatment, and substance use treatment more broadly, the current study preliminarily examined within- and between-person variability in EMA items assessing caregiver-adolescent communication, general parenting practices, and substance-specific parenting practices and how these caregiving behaviors correlated with momentary treatment targets. Overall, the results suggested that caregiving behaviors vary across days and moments, highlighting the need for larger studies examining the psychometrics (eg, internal consistency, test-retest reliability, convergent and discriminant validity) of these EMA caregiving constructs.

Consistent with suggested guidelines,⁶⁴ there was sufficient within-person variability in morning reports and

random assessments of caregiver-child communication, general parenting practices, and substance-specific parenting practices. Due to the very low number of observations for adolescent and caregiver morning reports of caregiver reactions to adolescent alcohol use, ICCs could not be computed. This item was only administered to adolescents when they reported prior day alcohol use or to caregivers when they reported their adolescent drank alcohol the prior day. This suggests that during IOP treatment, when alcohol use is a rare behavior even among adolescents with AUDs, it is not feasible to parse between- and within-person effects for caregiver reactions to alcohol use. In line with non-intensive longitudinal measures of this construct,⁵¹ there may be utility in reframing this item to be “If your child drank yesterday, my parent/caregiver . . .” This framing would capture behavioral intentions and allow for responses even when use was not endorsed. Additionally, this item may be better suited for lower levels of care (eg, outpatient treatment) or samples of adolescents not in treatment where drinking is more common.

Interestingly, for the majority of parenting constructs, there was greater within-person variability for caregiver compared to adolescent reports. Said otherwise, whereas adolescents viewed parenting behaviors as more trait-like, caregivers viewed their behaviors as more flexible, varying across days and moments. As an example, within-person variability in caregiver warmth during interpersonal interactions was 40% for adolescents in comparison to 64% for caregivers. Similarly, within-person variability in adolescent disclosure was 22% in comparison to 63% for caregivers. These findings add nuance to prior work documenting entrenched maladaptive dynamics between adolescents with AUD+CODs and their caregivers entering treatment. Parenting behaviors may be viewed as more entrenched and stable from an adolescent’s perspective but seen as varying more from the caregiver’s perspective. Promoting greater perceived flexibility in parenting behaviors may be an important initial step in improving caregiver-adolescent dynamics during treatment. Future caregiver-involved treatment research may benefit from identifying the

specific treatment components that foster greater adolescent perceived variability in parenting behaviors.

Within-person correlations were conducted to examine how the EMA parenting items related to indicators of momentary treatment targets. Given the small sample size in the current study and the small magnitude of the correlations,⁶³ these correlations should be viewed with caution and require future replication with larger samples with stronger EMA compliance. In contrast to study hypotheses, there were few within-person correlations between morning reports of communication frequency as well as parental reactions to alcohol and cannabis with use intentions, treatment motivation and engagement, mental health symptoms, and alcohol and cannabis use. Days when adolescents and caregivers reported more conflict than on average were associated with greater alcohol intentions and use as well as externalizing symptoms. These findings replicate studies examining the relationship between parent-adolescent conflict and alcohol use and mental health across longer time scales.²⁶ However, associations between the monitoring dimensions of knowledge, disclosure, and solicitation were predominantly in the direction opposite to study hypotheses. Days when adolescents and caregivers reported greater caregiver knowledge, solicitation, and adolescent disclosure were associated with greater internalizing and externalizing symptoms. These findings echo concerns about prior parenting research that looks to draw within-family conclusions from between-person findings.^{31,65} Indeed, when running correlations without parsing between- and within-person effects, monitoring, disclosure, and solicitation were protective (eg, negatively associated with alcohol intentions and positively associated with treatment motivation and engagement; see Supplemental Tables 1 and 2). If monitoring strategies meant to enhance long-term recovery worsen short-term mental health symptoms, therapists should be informed and implement measures to mitigate these immediate effects.

Correlations for caregiver-child communication were largely in the hypothesized direction for random assessment items. Consistent with prior work demonstrating stronger within-person associations between momentary and daily warmth and positive adjustment,^{36,57,66} adolescent- and caregiver-reported momentary warmth was associated with lower negative affect and greater positive affect. Moments when adolescents reported their caregivers acted more warmly or they acted more warmly than on average was also associated with lower alcohol craving. Dominance was only related to cannabis craving such that moments when adolescents reported their caregivers acted more dominant or they acted more dominant than on average were associated with lower cannabis craving. In line with EMA studies of parental conflict in community samples, greater momentary adolescent and caregiver reports of conflict were associated with greater adolescent negative affect and adolescent reports of conflict were associated with greater momentary alcohol craving. These findings highlight the dynamic influence of caregiver-adolescent communication dynamics during AUD+COD treatment on momentary treatment targets. Adopting momentary

measures of caregiver-adolescent communication may help identify how and when families shift their dynamics to be more facilitative of recovery during treatment as well as periods of negative communication dynamics that could facilitate therapist intervention.

Correlations for random assessments of general and alcohol-specific parenting practices were more mixed with study hypotheses. Although morning reports of knowledge were positively associated with internalizing and externalizing symptoms, momentary adolescent and caregiver reports of knowledge were associated with lower alcohol craving, and momentary adolescent reports of knowledge with lower negative affect. These discrepancies in daily and momentary correlations reflect the complexities of assessing monitoring on shorter time scales and the importance of continued EMA measure development and testing for monitoring.⁵⁸ When adolescents reported their caregivers engaged in more parenting practices in the moment, they reported greater alcohol craving and positive and negative affect. Positive associations between positive parenting and alcohol craving and negative affect may be a function of examining cross-sectional associations. Specifically, caregivers engage in more positive parenting practices (eg, hugs, providing rewards, praise) when their child is experiencing craving to help their adolescent manage their cravings or reinforce their use of skills to manage their cravings. Similarly, elevated associations between momentary alcohol communication and craving may reflect that greater communication increases craving, which has been found in longitudinal studies spanning long time periods for example, van der Vorst et al⁶⁷ or that caregivers talk more with their teens about alcohol when they're experiencing increased craving. Future studies exploring lagged associations will be important to better understanding the short-term associations between these parenting practices and momentary treatment targets.

Limitations

It is important to consider our study in the context of its limitations. ICCs are sample-specific and may not generalize to other samples, including adolescents who are enrolled in higher or lower levels of treatment for AUD+CODs. EMA compliance in the current study was poor and may be associated with key processes of which we are interested (eg, poor compliance occurring during moments of caregiver-adolescent conflict or adolescent alcohol use). Because of the small level 2 sample size (ie, 15 dyads), we were unable to examine correlations at the between-person level. Relatedly, formal power analyses were not conducted for the present study and power was likely limited due to poor EMA compliance. To reduce participant burden, our EMA morning reports and random assessments were brief. Because of this, we were unable to capture the full range of parenting behaviors that have been previously linked to adolescent alcohol use and adjustment. In light of the overall small sample size, poor EMA compliance, especially by the adolescent participants, the results should be interpreted with caution. To determine whether the EMA parenting

constructs included in the present study should be adopted, future work is needed to formally evaluate the psychometrics of these items. Specifically, the internal consistency, test-retest reliability, model fit at both the between- and within-person level, as well as the convergent, discriminant, and prospective predictive validity of these EMA constructs should be examined.

Conclusion

The present study found daily and momentary EMA measures of caregiver-child communication, general parenting practices, and substance-specific parenting practices had significant within-person variability indicating that these processes vary day-to-day and moment-to-moment. Concurrent within-person correlations indicated that while some processes correlated in the expected direction with momentary treatment targets (eg, caregiver warmth, conflict), others had correlations in a direction opposite to study hypotheses (eg, parental solicitation, adolescent disclosure, positive parenting). To facilitate a rigorous science of examining momentary parenting practices during adolescent AUD and CODs treatment, and substance use disorder treatments more broadly, further testing of these items will be needed. Psychometrically reliable and valid items and measures of parenting practices at the daily and momentary level will enable answering questions related to what caregivers do during treatment to improve adolescent AUD and COD treatment outcomes.

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Supplemental Material

Supplemental material for this article is available online.

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