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CASE REPORT

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Case report: Transient symptoms of autism spectrum disorder in a 2-year-old boy

Devon N. Gangi[1] | **Ramkumar Aishworiya**[1,2,3] | **Monique Moore Hill**[1] | **Dan Thu Nguyen**[1] | **Rachel Ni**[1] | **Chandni Parikh**[1] | **Erika Solis**[4] | **Sally Ozonoff**[1]

[1]Department of Psychiatry & Behavioral Sciences, MIND Institute, University of California-Davis, Sacramento, California, USA

[2]Khoo Teck Puat-National University Children's Medical Institute, National University Health System, Singapore, Singapore

[3]Department of Pediatrics, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore

[4]Stanford University, Stanford, California, USA

Correspondence
Devon N Gangi, Department of Psychiatry & Behavioral Sciences, UC Davis MIND Institute, 2825 50 Street, Sacramento, CA 95817, USA.
Email: dngangi@ucdavis.edu

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Key Clinical Message

Though early ASD diagnosis is highly stable, this case report describes a rare situation in which symptoms resolved without intervention over a 4 month period. We do not recommend delaying diagnosis in symptomatic children who meet criteria but when major behavioral changes are reported after diagnosis, reevaluation may be beneficial.

KEYWORDS

autism spectrum disorder, diagnosis, screening, symptom resolution, transient

Autism spectrum disorder (ASD) is a neurodevelopmental condition characterized by symptoms in two domains: social communication/social interaction and restricted, repetitive patterns of behavior, interests, or activities (RRB). For an individual to meet DSM-5 diagnostic criteria, all three social communication/social interaction symptoms and at least two of four RRB symptoms need to be manifested. High stability of ASD diagnoses from 18 months of age onward and superior effectiveness of early intervention as compared to later in childhood has encouraged efforts to identify children at elevated probability of ASD as early as the second year of life.[1–5] A small group of children do lose their diagnosis of ASD, typically after a period of intensive early intervention.[6–8] Though they no longer meet the diagnostic criteria for ASD, many of these children have residual developmental concerns including attentional deficits, emotional/behavioral problems, and learning difficulties.[9–12] Spontaneous resolution of ASD symptoms without intervention is extremely rare. To our knowledge, only one such case has been reported, in which a 5.5-year-old boy had his ASD symptoms, present for at least 3 years, resolve over a period of 13 days, without any specific intervention for ASD.[13] In the current report, we present the case of a 24-month-old child who received an ASD diagnosis, meeting full diagnostic criteria (i.e., all three social communication symptoms and three of four RRB symptoms) following a telehealth-based comprehensive diagnostic assessment but subsequently no longer met diagnostic criteria at reevaluation at 28 and 36 months of age (i.e., only one RRB symptom), without any specific intervention for ASD in the period between the evaluations.

1 | CLINICAL CASE DESCRIPTION

1.1 | Medical, developmental, and family history

Ian* is a two-year-old boy, conceived naturally, born shortly before the beginning of the COVID-19 pandemic, at 42 weeks gestation with a birth weight of 10 pounds, 3 ounces. He is the first child of his parents; at the time of his birth, both parents were in their mid-twenties. His mother's health during pregnancy was excellent, with no complications during birth reported. Ian has experienced good physical health throughout his life. His parents reported that he achieved developmental milestones within age expectations (see Table 1).

Ian lives with both birth parents, a younger brother (born when Ian was 22 months old), and his grandparents in a suburb of a medium-size city. His family is middle-class and parents are college-educated. Both parents are highly involved in his care. Parents are attuned to his needs and provide a warm, loving home environment. He is taken care of in the home by one parent while the other parent works, as well as by grandparents living in the household. There was no evidence of abuse or neglect and parents did not report any trauma experienced by Ian. Ian is raised in a bilingual household. There is no known family history of ASD, ADHD, or any other psychiatric disorder.

1.2 | Screening history

Before Ian was 6 months old, his parents enrolled him in a longitudinal online screening study that draws participants from across the United States. The purpose of the study was to compare the psychometric properties of several autism screening instruments in a large community sample of children. Participation in the study includes completion of screening instruments online at five time points between 6 and 36 months, including the Infant Toddler Checklist (ITC)[14] and Modified Checklist for Autism in Toddlers-Revised (M-CHAT-R),[15] both widely used in clinical settings, with satisfactory psychometric properties (ITC, sensitivity of 0.88 and specificity of 0.88; M-CHAT, sensitivity of 0.83, and specificity of 0.94).[16,17] A parent concerns questionnaire and the Video-referenced Infant Rating System for Autism (VIRSA),[18] a screening measure that utilizes video examples rather than written descriptions of behavior, were also administered. Any child who screens positive on any instrument at any age is invited to complete developmental evaluations via telehealth at 24 and 36 months of age. In this study, screening positive was defined as M-CHAT-R initial scores ≥3 at 18 or 24 months,[15] ITC Total or Social Composite scores below the 10th percentile,[16] or VIRSA scores ≤3 at any age.[18]

Ian's scores on each screening instrument, as well as parent concerns, from 6 to 24 months are presented in Table 2. Ian screened positive on the VIRSA at 18 months and the M-CHAT-R at 24 months (score = 3). His parents did not endorse any worries about his development or behavior on the parent concerns questionnaire until 24 months, when they reported concerns about expressive language development (e.g., not yet talking regularly, vocabulary consisting of three words) and social development (e.g., lack of interest in other children).

TABLE 1 Ages at which developmental milestones were achieved

Developmental milestone	Age achieved
Rolled over	4 months
Sat alone	6 months
Crawled	8 months
Pulled to stand	7 months
Walked	12 months
Fed with spoon	12 months
Fed with fork	12 months
Spoke first word	16 months

1.3 | Initial diagnostic evaluation

As part of the study protocol, Ian received a diagnostic evaluation via telehealth after screening positive. The evaluation included a review of his behavioral and medical history and development (via caregiver interviews) and direct observation of symptoms (via the TELE-ASD-PEDS and observation during the sessions) by specialists experienced in early ASD diagnosis, consistent with clinical guidelines.[19] At the time of the evaluation, Ian was 23 months, 28 days of age. The evaluation was completed via a secure video platform, with Ian and his parents in their home while the examiner observed, gave directions, and asked questions remotely.

The TELE-ASD-PEDS (TAP)[20,21] is an interactive tool used to assess behaviors associated with ASD in toddlers via 2-way videoconferencing, in which Ian's parents followed examiner instructions to play with him and present a series of activities meant to elicit social interaction and communication. Ian's total score on the TAP was 16, over the threshold indicative of ASD (cutoff = 12;

TABLE 2 Screening status from 6 to 24 months

	6 Months		9 Months		12 Months		18 Months		24 Months	
Parent concerns	No concerns		No concerns		No concerns		No concerns		Speech, social concerns	
VIRSA score	5.5		10		9		3*		3.5	
M-CHAT-R score	–		–		–		1		3*	
M-CHAT-R F/Up	–		–		–		–		1	
ITC	**SS**	**Percentile**	**SS**	**Percentile**	**SS**	**Percentile**	**SS**	**Percentile**	**SS**	**Percentile**
Social composite	9	37	14	91	14	91	12	75	10	50
Speech composite	10	50	10	50	7	16	7	16	3	1
Symbolic composite	8	25	13	84	7	16	12	75	8	25
Total	94	35	114	83	98	45	98	45	83	13

Note: *Screened positive on instrument; On the VIRSA, scores of 3 or below are considered screening positive. On the ITC, composite standard scores are based on a mean of 10 and Standard Deviation (SD) of 3, and the Total standard score is based on a mean of 100 and SD of 15. On the M-CHAT-R/F, initial scores of 3 and above or follow-up scores of 2 or higher are considered at-risk for ASD at 16 months and older.

Abbreviations: ITC, infant-toddler checklist; M-CHAT-R, Modified Checklist for Autism in Toddlers-Revised; F/Up, Follow-up; SS, Standard Score; VIRSA, Video-referenced Infant Rating System for Autism.

range 7–21). The examiner noted the following behavioral observations:

> *Ian demonstrated some encouraging behaviors, such as imitating his parents (e.g., when they were blowing bubbles), playing near them, seeking proximity when he was upset, and laughing during preferred activities. Ian also showed many behaviors consistent with ASD. His eye contact was very limited and he rarely used gestures (i.e., only pointed one time without eye contact). Ian did not respond when his parents called his name on multiple occasions or follow their points. He requested by taking his parents' hands and leading them to or placing their hands directly on desired objects, without making eye contact. Ian also used his father's hand to point when responding to questions (e.g., when his father asked where things were in a book). He did not use any words to communicate during the session. Ian's play was repetitive and sensorimotor in nature, often consisting of dropping objects off the table and watching them. He had difficulty transitioning between activities, often becoming upset when toys were removed.*

The Developmental Profile, 4th Edition (DP-4),[22] a parent interview about developmental milestones that can be used to quickly screen for developmental delays, was administered to Ian's parents. Ian's scores are presented in Table 3. He scored in the Average range on the Physical and Cognitive subscales, in the Below Average range on Adaptive Behavior, and in the Delayed range on Communication.

During a clinical interview focused on DSM-5 symptoms, Ian's parents reported that he had regressed in several areas over a few months prior to the evaluation, such as less waving and pointing, responding to questions less often, no longer saying "mama," and increased irritability, especially during transitions. They felt these declines coincided with the pregnancy and birth of his younger brother and an increase in screen time viewing (which had gradually increased from brief watching during care activities such as diaper changes to watching 2–4 h of videos per day). They felt that the evaluation was an accurate depiction of Ian's usual behavior. Based on the results of the evaluation, Ian was determined to meet DSM-5 criteria for ASD (see symptom checklist in Table 4). His parents were surprised by the diagnosis, having expected only a speech-language delay to be identified. They reported that they were not very familiar with ASD but once the diagnostic criteria were explained, they accepted the diagnosis and felt it fit Ian's current challenges.

1.4 | Interim time/events

Ian's parents began trying to access services for him after the initial evaluation through the state's early intervention (EI) system. As part of this process, the EI team conducted a brief telehealth screening for service eligibility. They told Ian's parents that he did not meet ASD criteria and suggested a reevaluation. No services were offered or received.

1.5 | Follow-up evaluations

Four months after the initial evaluation, Ian was enrolled in and assessed through a second independent study

TABLE 3 Scores on the Developmental Profile, 4th Edition

Age	Scale	Standard score	Percentile rank	Age equivalent (years: months)	Functioning range
24 months	Physical	99	47%	2:0–2:3	Average
	Adaptive behavior	73	4%	1:4–1:5	Below average
	Cognitive	94	34%	1:10–1:11	Average
	Communication	64	1%	1:0–1:1	Delayed
28 months	Physical	121	92%	3:0–3:5	Above average
	Adaptive behavior	109	73%	2:8–2:11	Average
	Social–Emotional	100	50%	2:4–2:7	Average
	Cognitive	105	63%	2:4–2:7	Average
	Communication	76	5%	1:6–1:7	Below average
36 months	Physical	121	92%	4:0–4:5	Above average
	Adaptive behavior	132	98%	5:0–5:5	Well above average
	Cognitive	131	98%	4:6–4:11	Well above average
	Communication	101	53%	3:0–3:5	Average

Note: The Social–Emotional subscale was not administered at the 24- or 36-month visit.

at the UC Davis MIND Institute. As part of that study's protocol, he was administered the TAP twice, 9 days apart, via telehealth with two independent examiners (both unaware of any prior evaluations or results). The DSM-5 clinical interview and DP-4 were also re-administered and current parent concerns solicited. Ian's parents re-completed the M-CHAT-R; his score at the follow-up evaluation was 0.

1.5.1 | First follow-up evaluation

At the time of the first reevaluation, Ian was 28 months, 15 days of age. Ian's score on the TAP during the reevaluation was nine, below the cutoff indicative of ASD (cutoff = 12). The examiner noted the following observations:

> *Ian demonstrated many well-developed social communication skills during this TAP administration. He frequently used eye contact to modulate social interactions and check in with his parents, directed consonant-vowel vocalizations and some words to others (e.g., "no," "mm-kay" for "okay") and used several non-verbal gestures, paired with eye contact, to communicate, including pointing, shaking his head "no," nodding "yes," signing "more," blowing to request bubbles, and using gestures associated with the "wheels on the bus" song. Ian responded immediately when his name was called, followed his mother's point to a distant object, made requests paired with eye contact and vocalizations, shared enjoyment with others, and initiated joint interactions. At times Ian scrambled toys during play and postured his hands in a slightly stereotyped manner. He resisted transitioning between some activities but responded well to redirection. Overall, he used fewer words than expected for a child his age.*

Ian's scores on the DP-4 at reevaluation are presented in Table 3. Scores on all subtests showed improvement from the initial evaluation, with only Communication scoring below average for his age. Ian's parents continued to be concerned about his language development (i.e., small vocabulary size, only one multi-word phrase). They no longer reported social concerns, noting that he had developed many skills in the 4 months since the initial evaluation, stating he was "like a different child." The examiner's clinical decision was that Ian's presentation was not indicative of ASD during the re-evaluation and he did not meet DSM-5 criteria for a diagnosis, but did exhibit an expressive language delay.

1.5.2 | Second (repeat) follow-up evaluation

As part of the study protocol evaluating test–retest reliability of the TAP, Ian received a repeat TAP administration 9 days after the full diagnostic reevaluation, with an independent examiner. During the second repeat TAP

TABLE 4 DSM-5 Symptoms of ASD present at 24 months of age

DSM-5 Diagnostic Criteria for Autism Spectrum Disorder, 299.00		
A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the all of the following		
Met	Not Met	
☒	☐	(A1) Deficits in social–emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.
		Comments: Ian rarely initiates social interaction other than to get help. It is hard to get his attention and he usually ignores the overtures of others. He does not respond to his name.
☒	☐	(A2) Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.
		Comments: Ian rarely makes eye contact or directs facial expressions to others. He rarely uses gestures and does not combine them with eye contact. He uses other people's hands to point or places their hands on objects to request.
☒	☐	(A3) Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.
		Comments: Ian shows limited interest in others as social partners. His parents reported that he shows little interest in other children.
B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following:		
Met	Not Met	
☒	☐	(B1) Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).
		Comments: Ian's play is often repetitive (e.g., dropping objects from the table).
☒	☐	(B2) Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat same food every day).
		Comments: Ian often has difficulty transitioning from preferred activities or toys and becomes upset when interrupted. His parents reported that he is often rigid during activities (e.g., only accepting water if his father gives it to him, not his mother).
☐	☒	(B3) Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).
		Comments: This was not a noted area of concern.
☒	☐	(B4) Hyper- or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).
		Comments: Ian visually inspects objects as they fall.

administration, Ian again demonstrated well-developed social communication skills. The examiner noted:

> *Ian initiated and responded to social interactions using eye contact and well-integrated gestures. He consistently responded to his name and maintained age-appropriate social–emotional reciprocity with his father. Ian directed his father's attention to different desired activities by pointing, nodding, and vocalizing. He smiled and directed many of his facial expressions to others. Ian demonstrated strong receptive language skills by successfully following his father's verbal instructions. His vocalizations were directed and communicative. Ian enjoyed turn-taking activities, including puzzles, bubbles, and completing actions associated with the "wheels on the bus" song.*

Ian's score on this administration of the TAP was eight, again below the ASD cutoff, and the examiner's clinical decision was also that he did not meet criteria for ASD.

1.5.3 | Consensus and reliability

With his parents' permission, video of Ian's repeat TAP administrations and other evaluation results were presented at a clinical case conference attended by approximately 25 licensed professionals, ASD experts, and clinical trainees. As a standard procedure in these conferences, attendees are invited to complete a diagnostic "poll" indicating whether the child presented meets criteria for ASD. Based on the video review of the initial evaluation, 100% of attendees indicated that he had ASD, while after viewing the second TAP administration, 80% did not think he met criteria for ASD.

1.5.4 | 36-month evaluation

As part of the original screening study protocol, Ian was reevaluated at 36 months, including a TAP and DP-4 administration, with an independent examiner unaware of the results of the three prior evaluations. Ian's score on the TAP at 36 months was nine, below the cutoff indicative of ASD (cutoff = 12). The examiner noted the following behavioral observations:

> *Throughout the assessment, Ian displayed warm social engagement with his father and well-developed social skills, including frequent eye contact, shared smiles, requesting, giving and showing toys to others, pointing and using gestures, and age-appropriate speech. He responded to his name immediately, enthusiastically showed his father toys he was playing with, and enjoyed interactions such as peek-a-boo. Ian easily transitioned between activities and regularly responded to and communicated with his father during the assessment. His language combined both multi-word sentences and nonverbal gestures such as telling his father he wanted to blow bubbles by saying, "I want to do it" while patting himself on the chest. Some of Ian's vocalizations had a repetitive quality (e.g., repeatedly saying "you put the blocks in here" as he placed them in a toy dump truck), but were clearly communicative (e.g., paired with eye contact and shared smiles) and related to the context.*

Ian's scores on the DP-4 at 36 months are presented in Table 3. His score on the Physical subtest remained stable, and scores on all other subtests showed improvement from the previous evaluation, including Communication (which now scored in the Average range). The examiner's clinical decision was that Ian's presentation was not indicative of either ASD or an expressive language delay.

1.6 | Behavioral coding

Video of each of Ian's TAP administrations was coded by an experienced coder unaware of the order or outcome of the evaluations. The frequency of occurrence of the following behaviors was coded, and rates per minute were calculated: eye contact, social smiling, verbalizations, distress, and repetitive behavior (see Figure 1). Coding of the video documented in an objective manner the

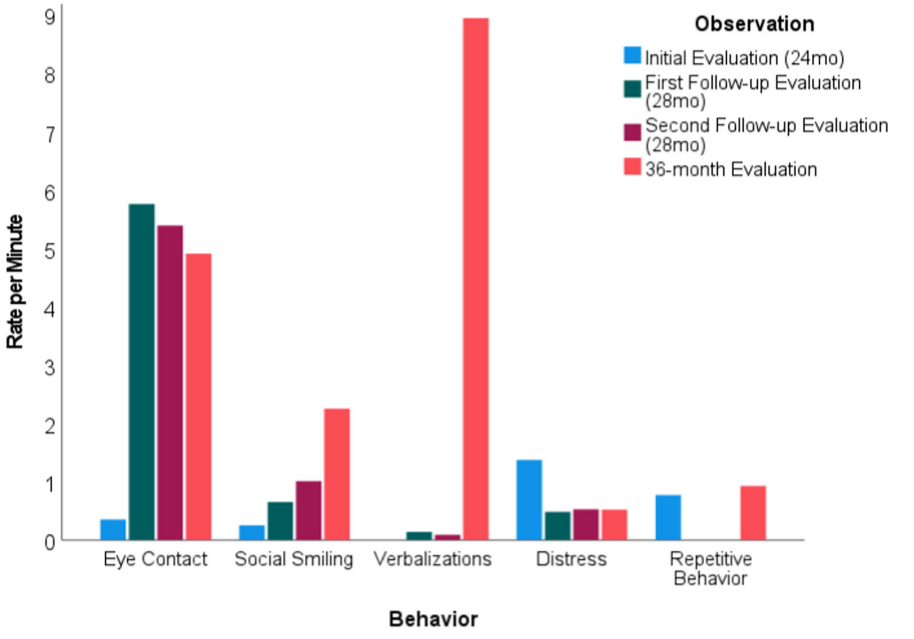

FIGURE 1 Rate of social, communication, and repetitive behaviors coded during each TAP assessment. At 24 months, no verbalizations were observed/coded; at both 28-month evaluations, no repetitive behavior was observed/coded.

differences that the four independent examiners had noted across assessments. Between Ian's first and follow-up evaluations, his rate of eye contact and smiling with his parents increased dramatically, and there was a slight increase in verbalizations. Ian's displays of distress and repetitive behaviors decreased. At 36 months, the dramatic increases in eye contact and smiling at others were maintained and verbalizations showed a remarkable increase (consistent with no longer being identified with a language delay). His level of distress stayed low, consistent with the follow-up evaluations. Coding demonstrated that Ian showed more repetitive behavior at 36 months than during the follow-up evaluations at 28 months, but the quality of this repetitive behavior differed from what was seen at the initial evaluation when he was diagnosed with ASD. Specifically, at 36 months there was no repetitive object use as observed at 24 months (repeated dropping of objects while watching them fall; use of parent's hand as a tool), only some repeated vocalizations that had a social-communicative function and age-typical intonation. The ratio of repetitive behavior/object use to functional and social play was much lower at 36 than 24 months. Overall, behavioral coding confirmed objectively the remarkable improvement in social behavior and decline in ASD symptoms reported by examiners from levels at the initial evaluation.

2 | DISCUSSION

Evidence shows that ASD diagnoses made as early as 18 months of age are very stable.[2,4,5] This case report highlights that, in rare cases, it is possible for a child's early presentation of ASD symptoms to be transient. We do not, however, wish to imply that clinicians should interpret this case as an indication to be overly cautious in diagnosing ASD in young children–if symptoms are clear and present to support a diagnosis, it should be made to aid in securing intervention services as quickly as possible. Instead, this case is an indication that the first evaluation is not the end of every child's diagnostic journey. Ongoing monitoring of a child's symptoms and reevaluation, particularly when drastic changes in behavior are reported or observed, are crucial to ensuring that a child's treatment plan is tailored to provide the greatest benefit and support where needed most.

A counterargument often made is that it is prudent to employ watchful waiting and delay diagnosis for children under three displaying ASD symptoms. However, we do not recommend this strategy for several reasons. First, rapid resolution of symptoms without intervention is very rare. In fact, diagnoses made as early as 14–18 months are extremely stable.[2–5] Second, a wait-and-see approach hinders access to services. While this may be a reasonable strategy if a child demonstrates only a few atypical behaviors, it is not helpful for a child who meets full diagnostic criteria, as Ian did, given long waiting lists for services. Rather, our intent in presenting this case is to highlight that if caregivers are reporting major changes in behavior after diagnosis, further evaluation may be warranted.

Ian's parents made changes in their household at the time of the initial diagnosis. Specifically, they eliminated all screen time for him right before the initial diagnostic evaluation. At that time, right after the birth of his younger brother, he was viewing 2–4 h of videos per day. His parents reported seeing drastic improvements in his behavior within 2 weeks of eliminating access to videos/screens. Exposure to electronics and screens (e.g., phones, TV, videos) is common at Ian's age, with 3/4 of children under five across the world exceeding the recommended guidelines for screen time limits[23] and reported increases in screen time for children during the pandemic.[24,25] There are a few studies suggesting a link between screen time and ASD symptomatology. Dong et al.[26] reported that children with ASD tend to spend more time looking at screens than typically developing children, with those with more screen time tending to have higher ASD symptomatology. A longitudinal study found that higher screen time at 1 year of age was associated with a higher likelihood of an ASD diagnosis at 3 years among boys.[27] A small study reported that some children with excessively high digital exposure (over half of waking hours) demonstrated subclinical autism-like symptoms but did not meet criteria for ASD.[28] A recent case report details two children with ASD who were receiving minimal intervention but demonstrated marked improvements in development and ASD symptoms when screen time was drastically reduced and replaced with social time.[29] These studies, small in size and not designed to determine the direction of causality, do suggest that some children may be particularly vulnerable to the impact of screen time on their development and behavior.

Ian was born just prior to the COVID-19 pandemic but was not infected with the virus in utero or during his first years of life, which has been associated with neurodevelopmental delays in a small number of papers.[30,31] There are other reports of developmental delays in children born during the pandemic,[32–34] whether exposed to the virus or not, but no published reports of transient autism symptoms. Ian did not experience any significant changes in his exposure to other children or social situations in the short period over which the autism symptoms abated. Therefore, pandemic-related exposures or restrictions do not readily account for either the development of his initial symptoms or their rapid resolution.

While the period of increased screen time and autism symptoms coincided with Ian's mother's pregnancy and the subsequent birth of a younger sibling, this is an adjustment experience common to many children and has never been associated with autism onset or transient symptoms in the literature. Ian's parents did not report excessively negative or unusual reactions to the new infant. While significant early deprivation and trauma have been associated with what has been termed "quasi-autistic patterns",[35] these attachment disorders are differentiable from ASD.[36] In Ian's case, there was no evidence of abuse or neglect; quite the contrary, Ian is being raised in a warm, loving environment, as documented by hours of video recorded in the home of Ian interacting with his parents and grandparents, who are highly engaged in his care, vigilant to his needs, and quick to seek help for his developmental delays.

Conducting evaluations for ASD via telehealth is a relatively new practice, increasingly used in response to the COVID-19 pandemic.[21] It is unlikely that the changes in Ian's development and behavior across evaluations were due to the assessment method (i.e., tele-assessment). First, all of Ian's evaluations were conducted via telehealth, so differences in behavior were not associated with differences in methods of evaluation. Second, Ian's parents confirmed at each tele-visit that the behavior seen was representative of his current behavior. Third, while the family was trying to access services for Ian after receiving the ASD diagnosis, an independent evaluator in the state EI system observed via telehealth platform that he did not meet criteria for a diagnosis just a few months later (spurring the reevaluation through our study). Though this was not a traditional in-person evaluation due to the pandemic, use of the TAP has shown high diagnostic agreement (86%) with clinical outcomes from a full diagnostic evaluation, including ADOS-2.[37]

This case report has several implications for clinicians involved in ASD diagnosis in young children. At the time a diagnosis is made, it may be beneficial to gather detailed information about the child's home and daily environment. This would allow for clinicians to assess whether, in addition to intensive EI services, recommendations such as limiting or eliminating screen time might also be beneficial. Such changes could be implemented by families immediately, even during the often-long gap between when a diagnosis is made and when treatment services begin. This case also highlights the importance for clinicians to be aware that resolution of ASD symptoms in young children within a short time frame can happen, if rare. Even after a diagnosis is made, ongoing monitoring of symptoms and solicitation of caregiver experiences regarding behavioral changes is crucial to understanding the child's current and ongoing presentation and treatment needs.

AUTHOR CONTRIBUTIONS

Devon N Gangi: Conceptualization; data curation; formal analysis; writing – original draft; writing – review and editing. **Ramkumar Aishworiya:** Conceptualization; writing – original draft. **Monique Moore Hill:** Data curation; writing – original draft. **Dan Thu Nguyen:** Data curation; writing – original draft. **Rachel Ni:** Data curation; writing – original draft. **Chandni Parikh:** Data curation; writing – original draft. **Erika Solis:** Data curation; writing – review and editing. **Sally Ozonoff:** Conceptualization; funding acquisition; supervision; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

Data for this study is available upon request from the corresponding author.

CONSENT

Written patient consent has been signed and collected in accordance with the journal's patient consent policy.

ORCID

Devon N. Gangi https://orcid.org/0000-0003-2885-4641
Ramkumar Aishworiya https://orcid.org/0000-0002-5749-1248

ENDNOTE

* Pseudonyms are used and identifying characteristics disguised to maintain confidentiality.

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