



CENTER FOR AUTISM RESEARCH

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ON THE ROAD OR ON THE WEB: NOVEL METHODS OF AUTISM ASSESSMENT IN RURAL APPALACHIA

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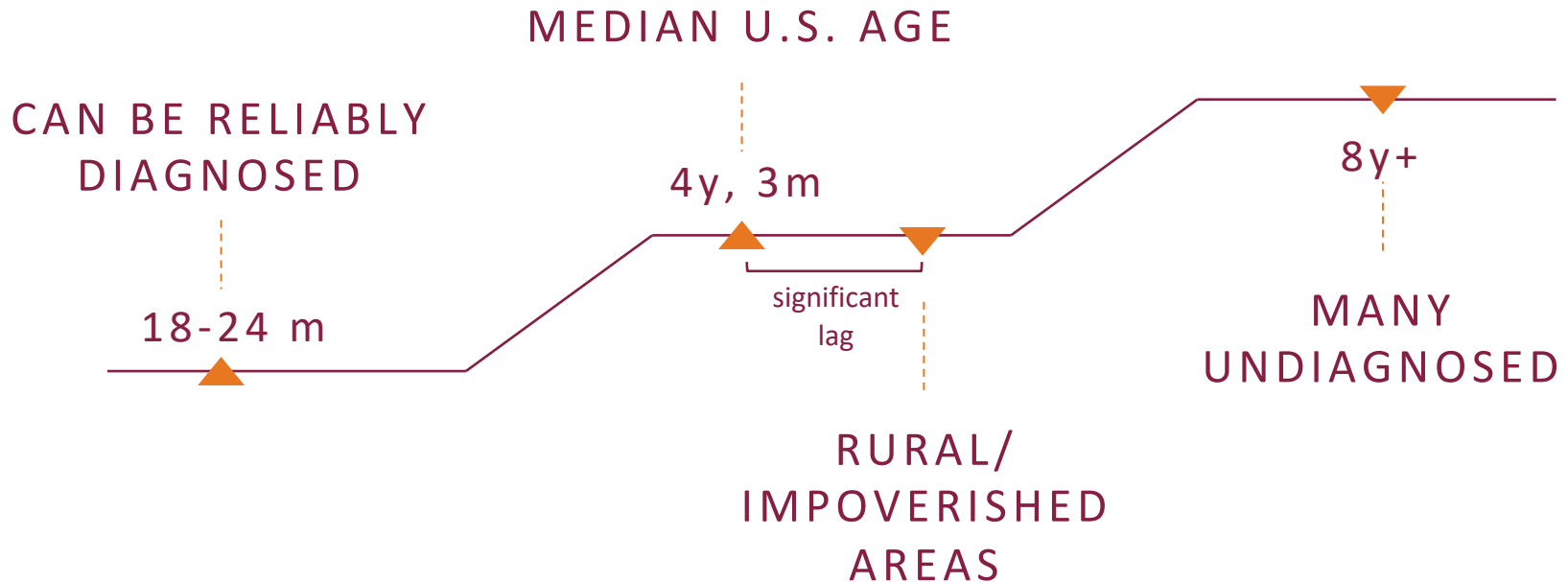
BACKGROUND

(CDC, 2023; Estes et al., 2015;
Zwaigenbaum et al., 2015)

1 in 36



WHEN IS AUTISM DIAGNOSED?



(Antezana et al., 2017; Lauritsen et al., 2014; Maenner, 2020; Mandell et al., 2005; Rhoades et al., 2007; Rural Health Information, 2020; Scarpa et al., 2020)

Rural Disparities

- Reduced services in rural areas
- Later diagnosis → Missed or delayed supports
- Perceived barriers in rural Virginia:
 - Too few providers
 - Affordability of services
 - Geographic location/isolation
- Limited availability of parent training/education

VIRGINIA TECH MOBILE AUTISM CLINIC (MAC)



Use of Telehealth

- Maximize time, staff, financial resources to reach more families
- Success of telehealth for ASD intervention
- Less guidance on ASD tele-assessment
- Gap: spanning childhood and adolescence

Benefits of Caregiver Psychoeducation

- Psychoeducation → increased parental competence and empowerment
- Caregiver empowerment = key factor in treatment success and confidence in managing child's care

THESIS STUDY

Pilot Study Aims

- Aim 1: Feasibility and acceptability of mobile and tele-assessment protocols
- Aim 2: Preliminary effects on caregiver ASD knowledge and empowerment

Participants

- 30 children with autism referral question
- One or both caregiver(s) of each child ($n = 34$)

Demographics: Children

	Mobile Assessment <i>(n = 15)</i>	Teleassessment <i>(n = 15)</i>	Overall <i>(n = 30)</i>
Age	<i>M=8.94 (SD=3.51)</i>	<i>M=7.92 (SD=4.22)</i>	<i>M=8.43 (SD=3.85)</i>
Sex			
Male	14 (93.3%)	10 (66.7%)	24 (80%)
Female	1 (6.7%)	5 (33.3%)	6 (20%)
Race			
White	14 (93.3%)	11 (73.3%)	25 (83.3%)
Black	0 (0%)	3 (20.0%)	3 (10%)
Bi-racial	1 (6.7%)	1 (6.7%)	2 (6.7%)
Ethnicity			
Hispanic	1 (6.7%)	0 (0%)	1 (3.3%)
Non-Hispanic	14 (93.3%)	15 (100%)	29 (96.7%)

Demographics: Parents

	Mobile Assessment (<i>n</i> = 16)	Teleassessment (<i>n</i> = 18)	Overall (<i>n</i> = 34)
Age	<i>M</i> =37.06 (<i>SD</i> =10.59)	<i>M</i> =37.78 (<i>SD</i> =6.93)	<i>M</i> =37.44 (<i>SD</i> =8.71)
Sex			
Male	1 (6.25%)	2 (11.1%)	3 (8.8%)
Female	15 (93.75%)	16 (88.9%)	31 (91.2%)
Relations			
Biological Mother	13 (81.25%)	11 (61%)	24 (70.6%)
Adoptive Mother	0 (0%)	4 (22.2%)	4 (11.8%)
Biological Father	1 (6.25%)	1 (5.6%)	2 (5.9%)
Adoptive Father	0 (0%)	1 (5.6%)	1 (2.9%)
Grandmother	2 (12.5%)	1 (5.6%)	3 (8.8%)

Current Study Procedures

Pre-COVID:

- Mobile Assessment
- In-person Feedback
- Three psychoeducation conditions:
 - ▣ In-Person Sessions
 - ▣ Telehealth Sessions
 - ▣ Informational Materials (paper)

During COVID:

- Tele-assessment
- Zoom Feedback
- Two psychoeducation conditions:
 - ▣ Telehealth Sessions
 - ▣ Informational Materials (emailed)



EVIDENCE-BASED AUTISM ASSESSMENT

- Observation-based measures (ADOS-2)
- Caregiver interview of development and social/communication behaviors (ADI-R)
- Best results when used in combination

OBSERVATION MEASURES:



ADOS-2

45-60 MINUTES
FACILITATED IN-CLINIC
BY STUDY CLINICIAN

MOBILE ASSESSMENT



CARS-2 OBSERVATION

15-20 MINUTES
FACILITATED BY CAREGIVER AT
HOME

TELEASSESSMENT

Procedure – Assessment

Mobile Assessment

- Session 1 (4 hours, in-person)
 - Caregiver: ADI-R
 - Child: cognitive, language, ADOS-2
- Session 2 (2 hours, phone)
 - Select ADIS-P Modules

Tele-assessment

- Session 1 (3 hours Zoom)
 - Caregiver: ADI-R
- Session 2: (2 hours Zoom)
 - Child: cognitive, language, CARS-2 Observation
- Session 3: (2 hours Zoom)
 - Select ADIS Modules

Week
1

- ASSESSMENT SESSIONS

Week
2

Week
3

- FEEDBACK SESSION

Week
4

- PSYCHOEDUCATION 1

Week
5

- PSYCHOEDUCATION 2

Caregiver Outcome Measures

- Recurrent:
 - ▣ Family Empowerment Scale
 - ▣ Autism Stigma and Knowledge Questionnaire

- After Psychoeducation Only:
 - ▣ Satisfaction Survey

Analysis Plan

- Feasibility and acceptability:
 - ▣ Index reasons for ineligibility, attrition, and adherence to scheduled sessions
 - ▣ Independent sample t -tests to compare caregiver satisfaction of mobile and tele-assessments

Analysis Plan

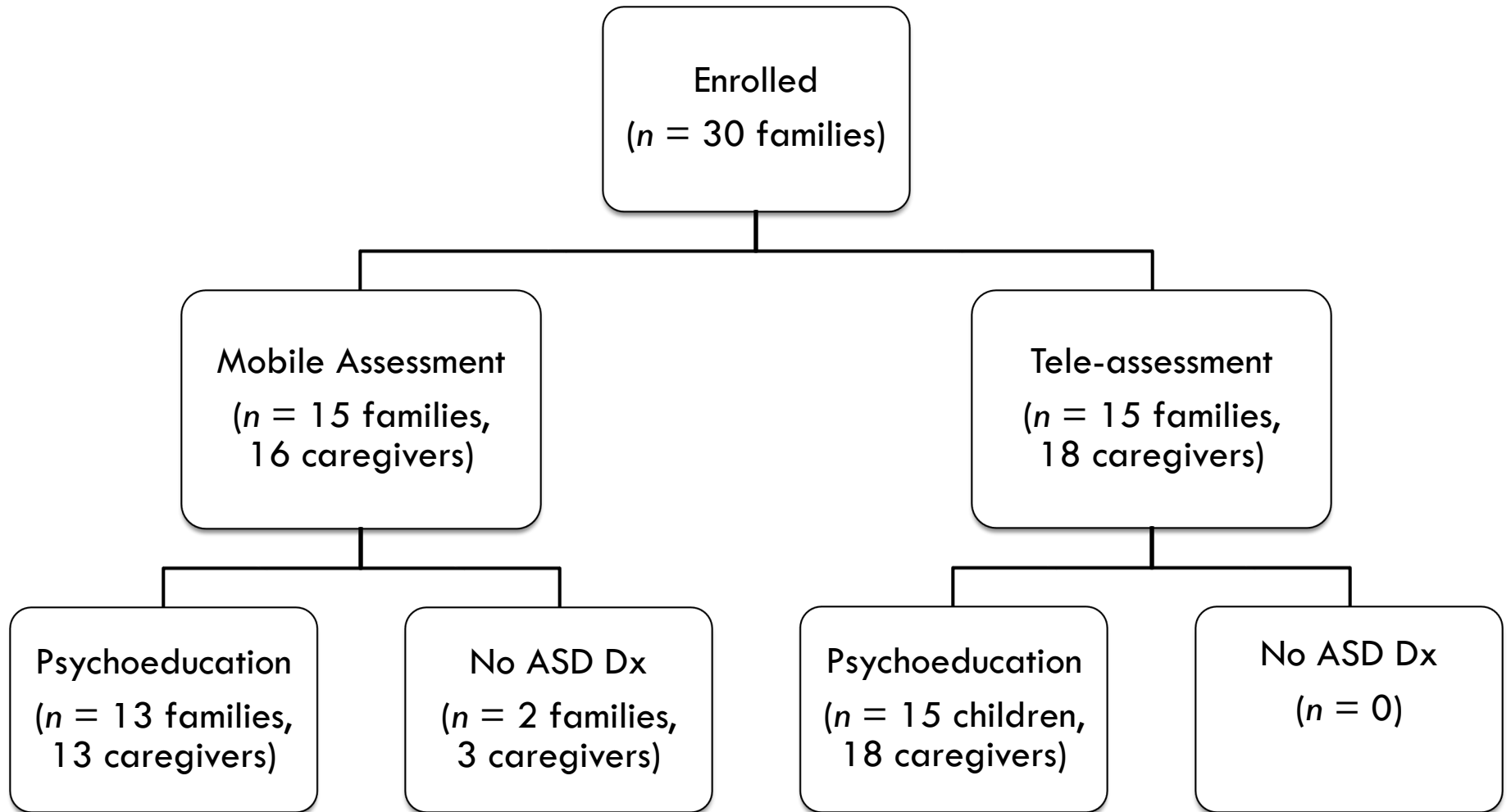
- Caregiver Outcomes: mixed factorial 2 X 2 X 3 repeated measures ANOVA for each outcome
 - Between-subjects:
 - Psychoeducation condition (i.e., sessions or materials)
 - Assessment type (i.e., mobile or teleassessment)
 - Within-subjects:
 - Time (intake, post-feedback, post-psychoeducation)
- Due to small sample size, examined effect sizes
 - partial eta-squared (η^2): small=0.01, medium=0.06, large=0.14

Hypotheses

1. Service models will be feasible & acceptable
 - ▣ Low attrition, high compliance with study schedule, high caregiver satisfaction
2. Caregiver empowerment & ASD knowledge will improve with diagnosis and education
 - ▣ Will be greater for education sessions than materials

THESIS RESULTS

CONSORT Diagram: Enrollment

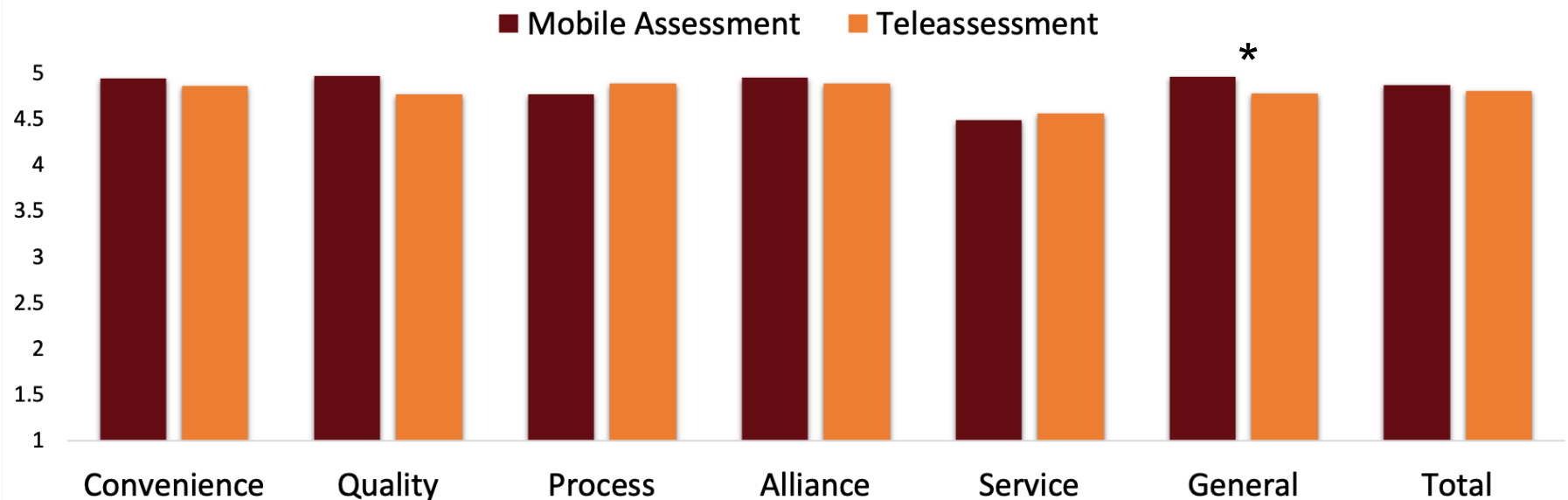


Feasibility: Timeline Adherence

- Everyone who started an assessment completed!
- Mobile Assessment: Estimated within 5 weeks
 - Top reasons for rescheduling: weather, family/work
 - 10 of 13 families (76.92%) completed on time
- Tele-assessment: Estimated within 6 weeks
 - Top reasons for rescheduling: work/family emergency, clinical staff delay
 - 11 of 15 families (73.33%) finished in planned time

Satisfaction

- Comparable caregiver satisfaction of in-person mobile vs. teleassessment services



Caregiver Empowerment

	<i>F</i>	Partial Eta Squared	<i>p</i> -value
Empowerment: Family			
Time	7.686	.235	.003*
Time X Psychoeducation	1.963	.073	.161
Time X Assessment	1.233	.047	.295
Time X Psychoeducation X Assessment	1.090	.042	.334
Empowerment: Services			
Time	1.383	.052	.260
Time X Psychoeducation	.241	.010	.787
Time X Assessment	.899	.035	.413
Time X Psychoeducation X Assessment	2.698	.097	.077+
Empowerment: Community			
Time	6.140	.197	.004*
Time X Psychoeducation	.294	.012	.746
Time X Assessment	1.061	.041	.354
Time X Psychoeducation X Assessment	1.329	.050	.274

* $p < .05$, + $< .10$

Caregiver ASD Knowledge

	<i>F</i>	Partial Eta Squared	p-value
Autism Knowledge: Total			
Time	5.160	.171	.015*
<i>Time X Psychoeducation</i>	.806	.031	.431
<i>Time X Assessment</i>	.610	.024	.516
<i>Time X Psychoeducation X Assessment</i>	.296	.012	.700
Autism Knowledge: Diagnosis			
Time	2.976	.106	.060 ⁺
<i>Time X Psychoeducation</i>	.216	.009	.806
<i>Time X Assessment</i>	.702	.027	.500
<i>Time X Psychoeducation X Assessment</i>	1.072	.041	.350
Autism Knowledge: Etiology			
Time	2.765	.100	.073 ⁺
<i>Time X Psychoeducation</i>	1.975	.073	.149
<i>Time X Assessment</i>	1.149	.044	.325
<i>Time X Psychoeducation X Assessment</i>	.107	.004	.899
Autism Knowledge: Treatment			
Time	3.207	.114	.049*
<i>Time X Psychoeducation</i>	.293	.012	.717
<i>Time X Assessment</i>	2.538	.092	.089 ⁺
<i>Time X Psychoeducation X Assessment</i>	.142	.006	.808

DISCUSSION

Key Take-Aways

1. Both novel delivery methods for ASD assessment highly feasible and satisfactory
2. Assessment and psychoeducation improved caregiver ASD knowledge and empowerment comparably across formats

Limitations and Future Directions

- Small sample size
- Could not detect small-to-medium effect sizes
- Single site limits generalizability
- Unique clinical context of COVID
- Remote observation lacks validation

DISSERTATION

STUDY PROCEDURE:



CARS-2 OBSERVATION

15-20 MINUTES
FACILITATED BY
CAREGIVER AT HOME

ONLINE VISIT: VIA ZOOM FROM HOME



ADOS-2

45-60 MINUTES
FACILITATED IN-CLINIC
BY STUDY CLINICIAN

IN-PERSON VISIT: LIVE, IN-CLINIC



IMPLICATIONS OF DISSERTATION PROJECT

- Will inform validity/utility of efficient remote observation
- Goal to refine and disseminate **free** training materials to community and university clinics
- Necessary to ensure consistency in training and practice during pandemic and beyond

Clinical and Research Implications

- Inform delivery methods to overcome financial, geographic, availability barriers
- Clinical utility of mobile assessment for rural areas, telehealth more broadly (crisis, weather)
- Need novel data collection tactics for follow-up
- High success in rural, under-resourced region
- Capitalize on strengths of each method/tool



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CENTER FOR AUTISM RESEARCH

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QUESTIONS?