Reducing early childhood practitioner stress by connecting children to nature

Matthew Brooks; Carrie Clark (advisor); Jordan Wheeler (advisor)

INTRODUCTION

- Nebraska early childhood (EC) education is in the throes of a practitioner-retention crisis, and increasing practitioners' connections with nature remains an understudied—but promising—solution
- Buffett Institute survey indicates practitioners are experiencing unprecedented stress (Daro, Gallagher, & Cunningham, 2022):
  - 45% experiencing symptoms of burnout
  - 9 in 10 providers report difficulty in filling open positions
  - Notes an urgent need for stress and burnout reduction strategies
- Researchers have linked experiences with nature to improved human health (Jimenez et al., 2021), well-being (Schutte, Torquati, & Stevens, 2021), and learning outcomes (Jordan & Chawla, 2019; Kuo, Barnes, & Jordan, 2019)
- Generalized Unsafety Theory of Stress (GUTS; Brosschot, Verkuil, & Thayer, 2018) emphasizes environmental contributions to psychophysiological stress responses
- In 2018, Nebraska Early Learning Guidelines (NELG) were revised to include "connecting children to nature"
- This proposed research and pilot survey aligns with two major research agendas regarding nature contact and human health (Frumkin et al, 2017; Jordan & Chawla, 2019)

AIMS

Aim 1: Determine EC practitioners' use of the "connecting children to nature" recommendations from the NELGs

Aim 2: Identify implementation practices that EC practitioners use to connect children to nature.

Aim 3: Determine the association of nature-based activities with the stress of EC practitioners

Exploratory Aim: Examine subgroup differences by provider and practitioner characteristics

PROPOSED PROJECT DESIGN
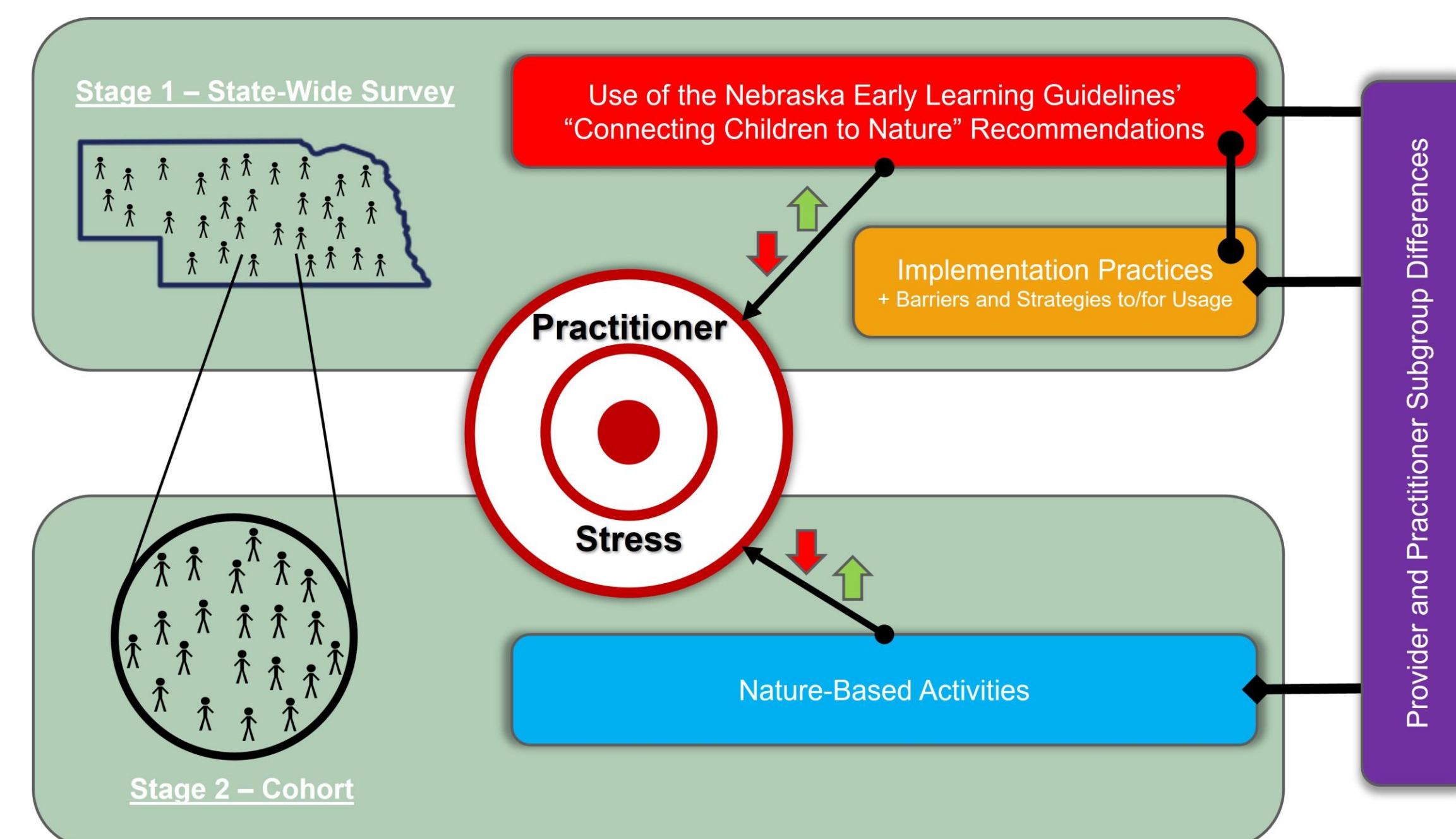
PROPOSED METHODOLOGY

Project objectives are to evaluate whether and how providers are already using the NELGs in their practice and determine if nature-based activities help reduce practitioner stress. My central hypotheses are that NELG recommendations for nature-based activities are not widely adopted but that practitioners who do use the NELG recommendations will show reduced stress during and following nature-based activities.

Stage 1 – State-wide Survey

Participants: Survey will be distributed to 200+ licensed Nebraska EC practitioners using connections with NDE Early Learning Coordinators, the Buffett Institute, and UNL EC extension

Measures: The Nebraska Early Learning Guidelines – Connecting Children to Nature Engagement instrument** (NELG-CCNE), Nature Relatedness Scale (NR-6; Nisbet & Zelenski, 2013), Job Demands Scale from the Childcare Worker Job Stress Inventory (Curbow, et al, 2000), Perceived Stress Scale (PSS-10; Cohen & Williamson, 1988), Single-item Maslach Burnout Inventory (Rohland, Kruse, & Rohrer, 2004)

Analysis: Polytomous Rasch modeling, Descriptive Statistics, Pearson's r correlations, Differential Item Functioning (DIF), natural language machine learning (latent semantic analysis, latent Dirichlet allocation)

Stage 2 – Cohort

Participants: 25 licensed Nebraska EC practitioners will be recruited from state-wide survey participants

Measures: Heartrate Variability (HRV) aka Vagal Tone (High Frequency, rMSSD) will be used as an index for parasympathetic nervous system function (physiological proxy measure for stress). Ecological Momentary Assessments (EMAs) of self-reported, perceived stress delivered at each timepoint for each condition
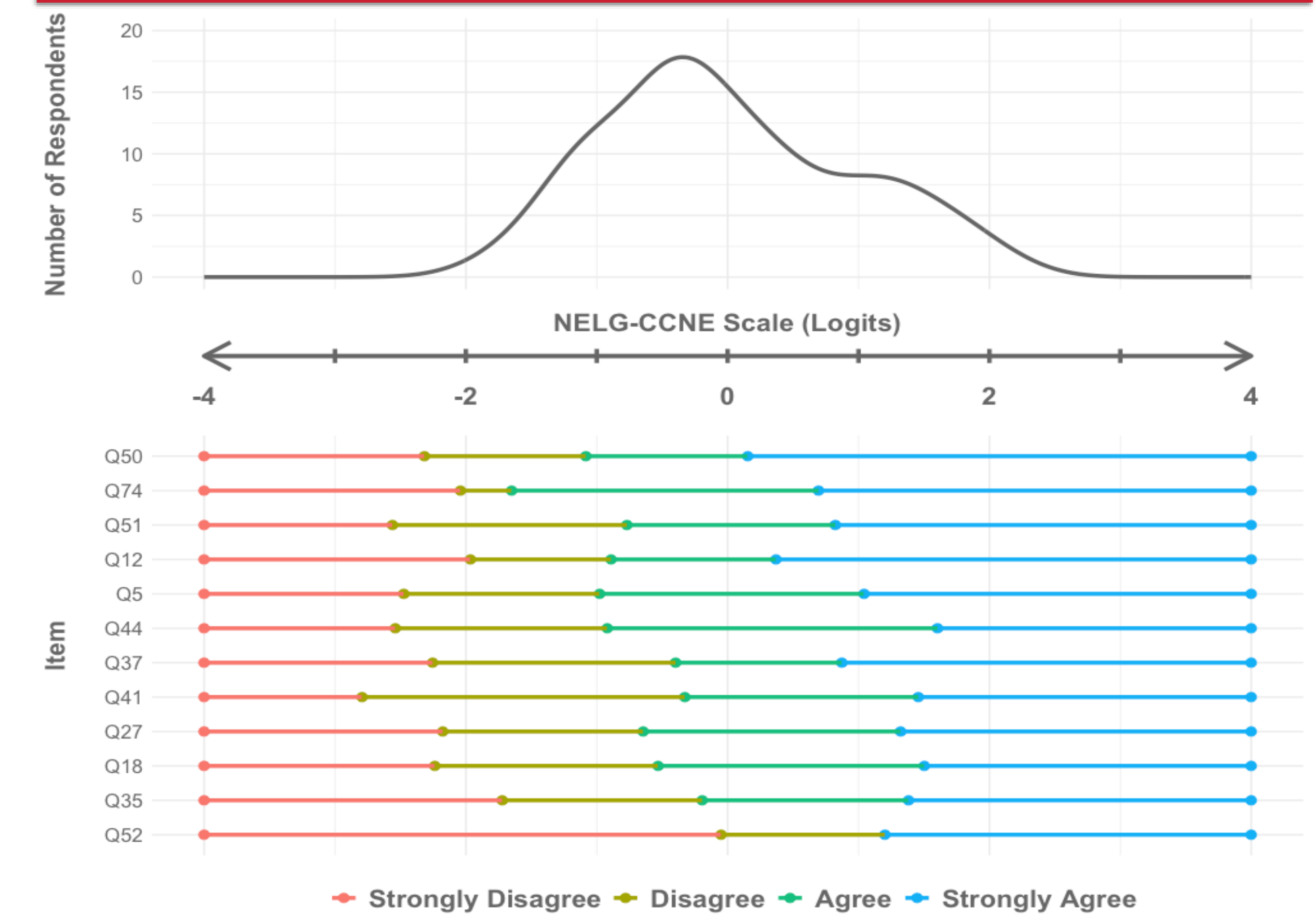
Analysis: Pearson's r correlations, repeated measures ANOVA

Conditions	T1 (baseline)	T2	T3	T4	T5	T6
Nature Activity (reference)	-	-	-	-	-	-
Non-Nature Activity	-	-	-	-	-	-
Rest	-	-	-	-	-	-

(Cohort Recruitment; Intake & Familiarization)

**NELG-CCNE PILOT SURVEY

The NELG-CCNE is currently being piloted for use in the proposed project. As a part of this piloting, 74-items were derived directly from NELG recommendations denoted by the 'green leaf' indicator (🌱). Conceptual (cognitive interviewing) and statistical analyses (Rasch-validation and Classical Test Theory approaches) are being employed to reduce the 74-item set to an efficient, reliable, and valid subset of items that can indicate self-reported practitioner use of the NELGs.

PILOT PRELIMINARY ANALYSIS

NELG-CCNE Scale (Logits)

Item: Q50, Q74, Q51, Q12, Q5, Q44, Q37, Q41, Q27, Q18, Q35, Q52

Strongly Disagree — Disagree — Agree — Strongly Agree

Respondents	Items	Cronbach's α	FA Variance Explained	IRT Reliability	IRT Variance Explained
41	12	0.86	0.363	0.85	0.398

Item	Item Stem	ICC
Q50	My learning environment has a variety of living and non-living materials from the natural world (e.g., plants, animals, rocks)	
Q5	I am aware of the "Connecting Children to Nature" recommendations in the Nebraska Early Learning Guidelines (as marked by the green leaf icon)	
Q52	I take students on field trips to observe different environments (e.g., farm, aquarium, zoo, tree nursery)	

DISCUSSION

Key take-aways…
- *Proof-of-concept Rasch validation suggests the NELG-CCNE could serve as a tool to evaluate practitioners' use of NELG recommendations, a first for Nebraska*

Applying the results…
- *NELG-CCNE findings offer practical recommendations for promoting the use of the NELGs, potentially reducing practitioner stress and burnout*

Next Steps…
- *Complete preliminary analysis of NELG-CCNE and apply the tool at scale according to the proposed project*

For reference pages, full NELG-CCNE preliminary item set, and other inquiries regarding the approaches or results outlined above, please contact Matthew Brooks via email at mbrooks5@huskers.unl.edu

University of Nebraska–Lincoln