eMBRACE
Establishing Mechanisms of Benefit to Reinforce the Alzheimer's Care Experience

Supporting Discrete Caregiving Behaviors

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June 23, 2025

Disclosures

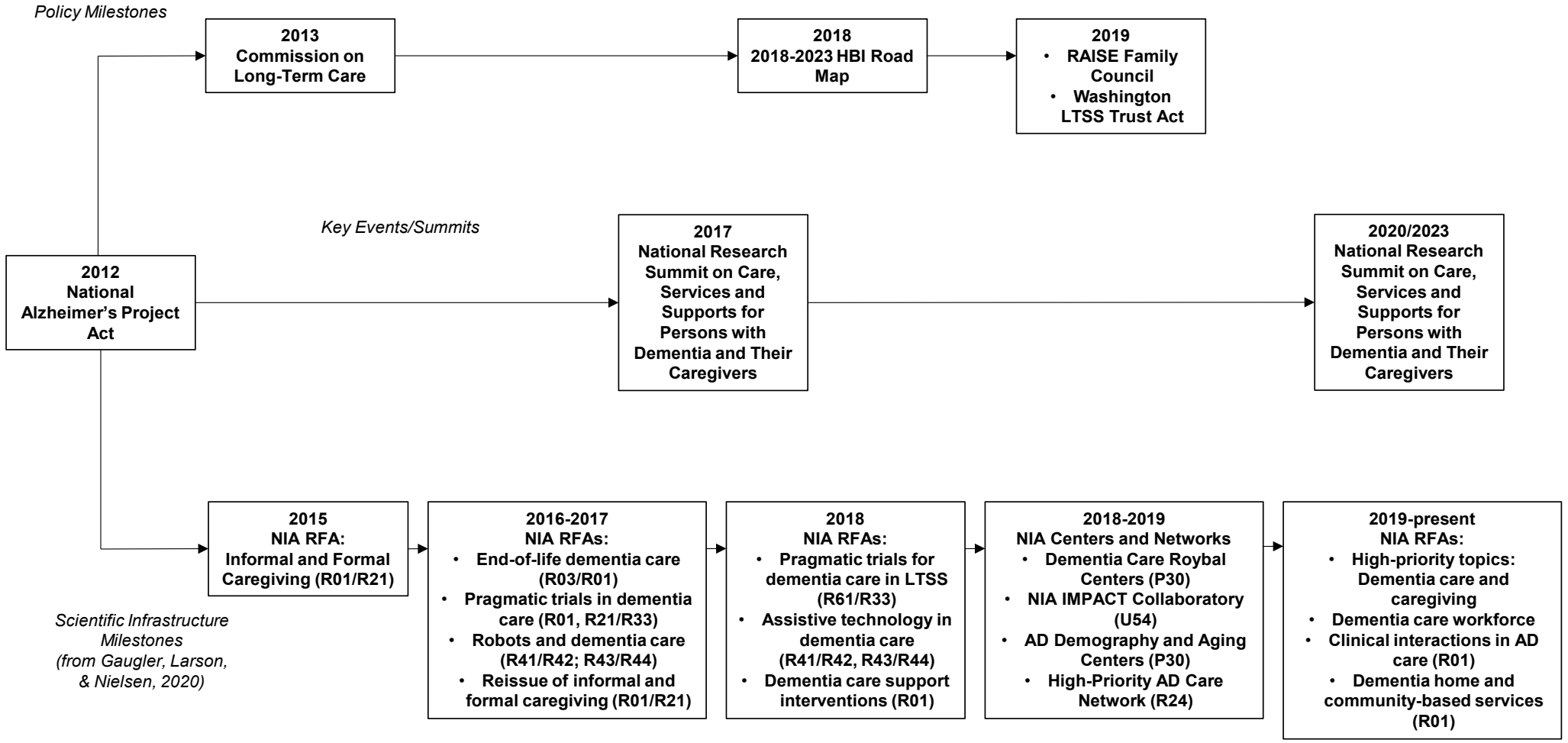
- EMBRACE AD/ADRD Roybal Center is supported by the National Institute on Aging of the National Institutes of Health under Award Number P30AG086642 (Gaugler & Gilmore-Bykovskyi)

Aims

- Brief overview: The science of caregiving
- Discrete behaviors, behavioral gerontology, and caregiving
- AI applications/ideas

Rough Trajectory of Caregiving Science

- 1960s-1980s
  - Identification of caregiving as an issue in gerontology
  - Measurement of key caregiving concepts/outcomes (e.g., Lawton et al., 1989; Montgomery et al., 1985; Zarit et al., 1980)
- 1980s-1990s
  - Theoretical refinement (e.g., Pearlin et al., 1990; Schulz, 1990)
  - Intervention development and early evaluation
- 1990s-2000s
  - Longitudinal research, emphasis on transitions (e.g., Aneshensel et al., 1995; Schulz & Beach, 1999; Schulz et al., 1997,2001)
  - Syntheses of caregiving effects (e.g., Schulz et al., 1990, 1995; Schulz & Sherwood, 2008; Schulz & Martire, 2004; Vitaliano et al., 2003; Pinquart et al., 2003, 2005, 2006, 2007)
  - More rigorous intervention design and evaluation (e.g., REACH/REACH II; NYUCI; RDAD; Gitlin protocols; Savvy Caregiver; Dementia Care Collaboration models; e.g., Schulz, 2000)
- 2000s-present
  - Synthesis of racial and ethnic complexities in caregiving (e.g., Dilworth-Anderson et al., 2002)
  - Meta-analyses of caregiving interventions and their effects
  - Caregiving as a public health priority (Talley & Crews, 2007); nationally representative surveys of caregiving (HRS, NAC/AARP, etc.)
  - Dissemination and implementation efforts of evidence-based interventions
  - NAPA and reconsiderations of the state of dementia care science
  - Ongoing incorporation of technology and caregiving: as measurement, intervention, etc.



NOTE: NIA: National Institute on Aging; RFA: Request for Applications

From Gaugler, 2022

Discrete Behaviors (ABA)

- Simple presence or absence of an ability (van Hedger et al., 2020)
  - Has a beginning and end
  - Is observable
  - Is measurable
  - Distinct and separate from other behaviors
  - In contrast to continuous behaviors

Application of ABA to Management of Behaviors in Dementia (from Agronin et al., 2014)

- Behavior extends beyond the disease process: it is an interaction between the individual and the environment
- Advantages in long-term care and, perhaps by extension, caregiving:
  - Flexible and tailored treatment
  - Using the “why” to influence intervention approaches
  - May facilitate adaptive behaviors
- Targets antecedents, consequences, and general setting
- Staff/caregivers can view behavior as communication, to identify environmental triggers, and can take a more proactive approach

Behavioral Gerontology

- "The study of how antecedent and consequent environmental events interact with the aging organism to produce behavior" (Burgio & Burgio, 1986, p. 321).
  - Special issue in *Journal of Applied Behavioral Gerontology* published in 1986 (Iwata, 1986)
- In a review from 2011, the *Journal of Applied Behavioral Analysis* only published 5 articles that focused on aging from 2006-2011 (Trahan et al., 2011)
  - All five focused on the nursing home environment
  - Four of five focused on people with dementia
- Moore et al., 2007/Dixon et al., 2010 examples

Caregiving Examples

- From Burgio and Kowalkowski (2011): "However, **because of the field's assimilation by mainstream gerontology**, relatively few contemporary practitioners of 'things behavioral' have received formal training in behavior analysis. Moreover, the language used to describe their activities might not always sound very 'behavioral.'" (p. 3)
- Caregiving examples
  - STAR Caregivers protocols (Teri and colleagues)
  - REACH II
  - Tailored Activity Program (Gitlin and colleagues)

Gaps in Behavioral Gerontology (Trahan et al., 2011)

- Generalization/maintenance of behavior change
  - e.g., training for implementation
- The need to broaden focus beyond behavior “problems”
- Need to broaden context beyond the nursing home

Theoretical and Mechanistic Ramifications (from van Hedger et al., 2020)

- Describing behaviors with accuracy when informing both theories and mechanisms that explain such behaviors
- If a behavior is defined as discrete (i.e., present or absent), the underlying mechanisms must contribute to the behavior so that no variability is present
- May also limit questions and how participants are described/included in research efforts

Possible AI Extensions

- Identifying environmental patterns (antecedents and consequences) that result in discrete behaviors of caregivers and care recipients
  - Develop a personalized tool/application that is specific to a caregiving context
  - Extending and continuing work on remote activity monitoring technologies (e.g., Gaugler et al., 2019, 2021, 2022)

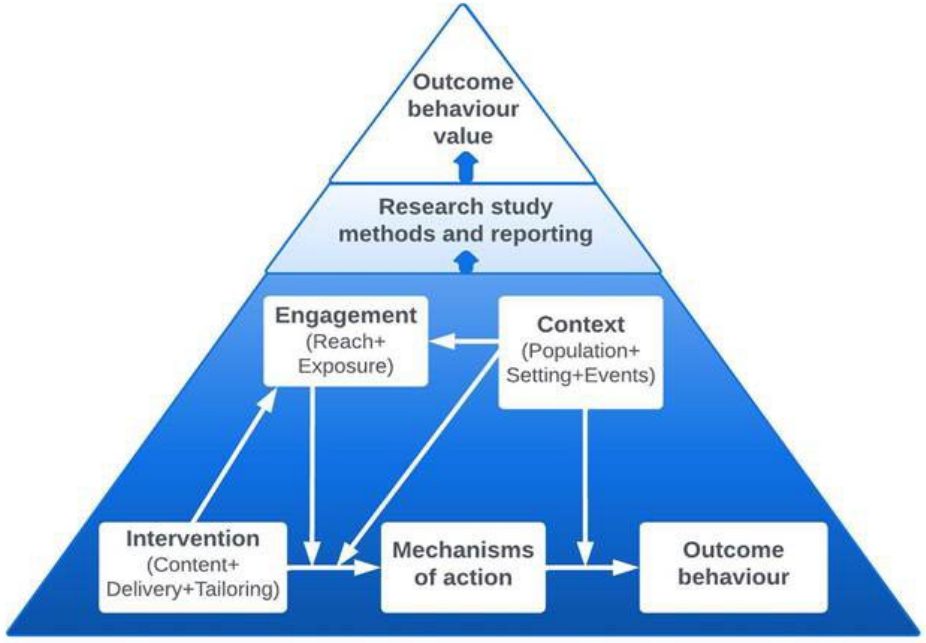
Problem List

Time of Day	Problem	What Went Before	What Happened After

(Zarit, 2009, p. 127, Table 6.4)

Other Possible AI Extensions

- Ontological tools (Susan Michie, UCL: Behavior Change Intervention Ontology/BCIO)
  - https://www.bciontology.org/
  - See also https://www.nationalacademies.org/our-work/accelerating-social-and-behavioral-science-through-ontology-development-and-use



Q & A

Thank you!

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