Dyadic designs, their foundation on theory and analytic methods

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Learning Objectives

Upon completion of this presentation, you should be able to:

• Understand what is meant by “dyad as unit of analysis or focus.”

• Understand the importance of theory and concepts as foundations to dyadic research.

• Understand some of the design and methodological considerations in designing and conducting dyadic research.
Overview of Presentation

• A Dyadic Approach to Illness and Care
• Role of Theory & Concepts in Dyadic Research
• Design & Methodological Considerations in Dyadic Research
• Role of Family and Culture
• Take-Homes
A Dyadic Approach

• The care dyad, by definition, consists of two people. But in most family care research the members of the dyad are examined separate from their interactions and the relationships they are situated in.
A Dyadic Approach

• Including both perspectives allows for greater understanding of the:
  – Dyadic & interpersonal processes involved in the dementia experience.
  – Impact of the experience on both members of the care dyad.
  – Ways the members of the care dyad are similar or different in their perceptions.
  – Care dyads where both members experience good outcomes versus the care dyads where both members experience poor outcomes.
A Dyadic Approach

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  – Dyadic & interpersonal processes involved in the dementia experience.
  – Impact of the experience on both members of the care dyad.
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  – Care dyads where both members experience good outcomes versus the care dyads where both members experience poor outcomes.

  – But, obtaining data from both members of the care dyad does not necessarily make the study dyadic unless the unit of focus and analysis is at the level of the dyad (Thompson & Walker, 1982).
What do we mean by unit of analysis/focus?

• Sampling unit or the focus of study?
• Dyad-based or dyad-focused?

• The continuum of dyadic research:

Including Two People

Interdependent/ Transactional Nature of the Dyad
What do we mean by unit of analysis/focus?

• Thompson & Walker (1982) – seminal paper. Proposed key characteristics of dyadic research:
  – Focus is at the level of relationship: pattern between two people.
  – Interpretation & Implications of data refer to the dyadic relationship.
  – Dyadic data must be “relational.”
What do we mean by unit of analysis/focus?

Incongruent perceptions of the care value: a pilot study of patient-family caregiver dyads

Lyndsey Miller, PhD, RN, Carol J. Whitlatch, Christopher S.

Quality of Life for Dementia Caregiving Dyads: Effects of Incongruent Perceptions of Everyday Care and Values

Heehyul Moon, PhD, Aileen L. Townsend, PhD, Carol J. Whitlatch, PhD, and Peggy Dilworth-Anderson, PhD

Patterns of Dyadic Appraisal of Decision-Making Involvement of African American Persons Living With Dementia

Kalisha Bonds, PhD, RN, PMHNP-BC, MiYoung Song, PhD, RN, FAHA, Carol J. Whitlatch, PhD, FQSA, Karen S. Lyons, PhD, FQSA, Jeffrey A. Kaye, MD, and Christopher S. Lee, PhD, RN, FAHA, FAAN, FHSA.

Kalisha Bonds, PhD, RN, PMHNP-BC

Heehyul Moon, PhD, MSW

Lyndsey Miller, PhD, RN
My Journey into Dyadic Research

Aline Sayer, EdD

The Dyad as the Unit of Analysis: Conceptual and Methodological Issues
Linda Thompson and Alexis J. Walker

Journal of Marriage and Family
Vol. 44, No. 4, Methodology: The Other Side of Caring (Nov., 1982), pp. 889-900 (12 pages)
Published by: National Council on Family Relations

Aging & Mental Health, May 2005, 9(3): 188-195

Using multilevel modeling in caregiving research
K. S. Lyons1, & A. G. Sayer2

Family Care Dyad

Caregiving as a Dyadic Process: Perspectives From Caregiver and Receiver
Karen S. Lyons1, Steven H. Zarit,1, Aline G. Sayer,2, and Carol J. Whitlatch1

Carol Whitlatch, PhD, FGSA

Steven H. Zarit, PhD, FGSA

NIA IMPACT COLLABORATIVE
TRANSFORMING DEMENTIA CARE
A Dyadic Approach

PLWD

Care Partner

Family Care Dyad

Theory
Role of Theory & Concepts

- Theories provide the scaffolding or handrail for research.
- They help to create bodies of knowledge and advance a field of research faster than disconnected atheoretical work.
- They guide us towards the concepts we should examine and potential explanations for our findings.
- They directly inform the design and conduct of interventions.
- They work synergistically with a body of knowledge to highlight gaps in the field, areas for innovation and limitations of our theories.
Role of Theory & Concepts

Individual-level theories are good, but they are limited in their ability to guide dyadic research as they do not capture the interdependence or interpersonal context.
Role of Theory & Concepts

• Dyadic theories and frameworks are predominantly focused on couples.

• Examples of dyadic theories include:
  – Interdependence Theory (Kelley, 1983)
  – Systemic-Transactional Model (Bodenmann, 1997)
  – Developmental-contextual model of couples coping with chronic illness (Berg & Upchurch, 2007)
  – Dyadic Health Behavior Change Model (Trivedi et al., 2016)
  – Theory of Dyadic Illness Management (Lyons & Lee, 2018)
Central Goal: To Optimize Dyadic Health

Figure 2. Theory of Dyadic Illness Management with predictors.

Dyadic Appraisal

• “Are we on the same page?”
  – Usually not.

• Dyadic appraisal research focuses on
  – symptoms, illness appraisals, goals of care.
  – within dementia, the focus is primarily on shared appraisals regarding the PLWD’s care values and preferences, decision-making involvement.
Dyadic Appraisal of IADLs and Barriers to Care

Relationship quality was significantly associated with dyadic appraisal. Cognitive impairment was not associated with dyadic appraisal.

Dyadic appraisal has been associated with:
- type of care partner,
- depressive symptoms,
- care strain,
- relationship quality,
- communication/concealment,
- collaborative management
- quality of life

Karen S. Lyons, Steven H. Zarit, Aline G. Sayer, and Carol J. Whitlatch

Caregiving as a Dyadic Process: Perspectives From Caregiver and Receiver
Incongruent Appraisals Predict QOL

Dyadic Management

• Dyadic management behaviors are the verbal and non-verbal behaviors that care dyads do to manage and cope with illness, symptoms and providing care (Lyons et al., 2021; Lyons & Lee, 2018). For example,
  – Communication
  – Decision-making
  – Supportive behaviors
  – Shared health behaviors
Dyadic Management

- Collaboration is on a continuum & will not look the same for every dyad.

- Dyadic management also encompasses the behaviors to optimize the care partner’s health – care partners often have their own health challenges.

One person does almost everything  Both people are highly engaged  One person does almost everything
Collaborative Management in Dementia

Factors influencing quality of life in African-American dementia dyads

Kalisha Bonds, Carol J. Whitlatch, MinKyoung Song and Karen S. Lyons

The SHARE program for dementia: Implementation of an early-stage dyadic care-planning intervention

Silvia Orsulic-Jeras, Carol J Whitlatch and Sarah M Szabo
Benjamin Rose Institute on Aging, Cleveland, OH, USA

Evan G Shelton
Department of Psychology, Cleveland State University, Cleveland, OH, USA; Benjamin Rose Institute on Aging, Cleveland, OH, USA

Justin Johnson
Dyadic Health

• Focusing on the health of the dyad allows us to balance the needs and health of both the PLWD and their care partner.

• If we only focus on one person’s health we can miss the impact of the intervention on both of them or how they influence each other.

• Two ways to think about this:
  – Interdependence in health
  – Patterns of dyadic health
Dyadic Health

Actor-Partner-Interdependence Models (APIM)

- Care Values of PLWD
- Quality of Life of PLWD
- Care Values of PLWD Reported by Care Partner
- Quality of Life of Care Partner

Diagram:

- Arrows indicate relationships between care values and quality of life for PLWD and care partner.
Dyadic Health in Stroke

Patterns of Dyadic Health

• Categorizing health using clinical cut-offs
  – Optimal Dyadic Health 😊😊
  – Poor Dyadic Health 😞😞
  – Incongruent Dyadic Health 😊😞

• Identifying patterns of health in the data
## Categories of Dyadic Health

### Table 1. Individual, dyadic and social characteristics and differences among dyadic depressive symptom groups.

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>Optimal Dyadic Health</th>
<th>Poor Dyadic Health</th>
<th>Incongruent Dyadic Health</th>
<th>p-value $^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n = 59$</td>
<td>$n = 18$ (31%)</td>
<td>$n = 19$ (32%)</td>
<td>$n = 22$ (37%)</td>
<td></td>
</tr>
<tr>
<td><strong>Depressive symptoms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient depressive symptoms ($↑ = worse$)</td>
<td>$6.9 \pm 5.2$</td>
<td>$2.2 \pm 1.7$</td>
<td>$8.8 \pm 3.4$</td>
<td>$8.9 \pm 5.9$</td>
<td>$&lt;0.001$</td>
</tr>
<tr>
<td>Care partner depressive symptoms ($↑ = worse$)</td>
<td>$4.0 \pm 4.4$</td>
<td>$0.9 \pm 1.0$</td>
<td>$9.1 \pm 3.5$</td>
<td>$2.2 \pm 2.6$</td>
<td>$&lt;0.001$</td>
</tr>
<tr>
<td><strong>Demographic and clinical characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient age (years)</td>
<td>$59.5 \pm 12.0$</td>
<td>$65.4 \pm 10.2$</td>
<td>$55.1 \pm 13.0$</td>
<td>$58.4 \pm 11.1$</td>
<td>$0.027$</td>
</tr>
<tr>
<td>Patient gender (female)</td>
<td>$20 (34%)$</td>
<td>$7 (39%)$</td>
<td>$5 (26%)$</td>
<td>$8 (36%)$</td>
<td>$0.688$</td>
</tr>
<tr>
<td>NYHA class III/IV</td>
<td>$44 (75%)$</td>
<td>$12 (67%)$</td>
<td>$14 (74%)$</td>
<td>$18 (82%)$</td>
<td>$0.546$</td>
</tr>
<tr>
<td>Hospitalized for HF in past 12 months</td>
<td>$17 (29%)$</td>
<td>$4 (22%)$</td>
<td>$5 (27%)$</td>
<td>$8 (36%)$</td>
<td>$0.591$</td>
</tr>
<tr>
<td><strong>Patient and care partner characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient-reported pain interference ($↑ = worse$)</td>
<td>$13.1 \pm 7.1$</td>
<td>$10.7 \pm 7.0$</td>
<td>$13.5 \pm 7.0$</td>
<td>$14.7 \pm 7.1$</td>
<td>$0.193$</td>
</tr>
<tr>
<td>Patient-reported fatigue ($↑ = worse$)</td>
<td>$24.5 \pm 8.7$</td>
<td>$19.1 \pm 9.4$</td>
<td>$26.9 \pm 7.7$</td>
<td>$26.9 \pm 7.1$</td>
<td>$0.005$</td>
</tr>
<tr>
<td>Patient-reported dyspnea ($↑ = worse$)</td>
<td>$5.5 \pm 6.1$</td>
<td>$3.3 \pm 5.6$</td>
<td>$5.2 \pm 5.8$</td>
<td>$7.7 \pm 6.3$</td>
<td>$0.075$</td>
</tr>
<tr>
<td>Care partner strain ($↑ = worse$)</td>
<td>$30.6 \pm 8.9$</td>
<td>$29.2 \pm 7.8$</td>
<td>$31.8 \pm 10.9$</td>
<td>$30.8 \pm 7.9$</td>
<td>$0.672$</td>
</tr>
<tr>
<td><strong>Dyadic characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient-reported concealment ($↑ = worse$)</td>
<td>$15.2 \pm 5.1$</td>
<td>$12.2 \pm 3.2$</td>
<td>$17.0 \pm 4.9$</td>
<td>$16.1 \pm 5.7$</td>
<td>$0.008$</td>
</tr>
<tr>
<td>Patient-reported relationship quality ($↑ = worse$)</td>
<td>$3.4 \pm 0.6$</td>
<td>$3.6 \pm 0.4$</td>
<td>$3.2 \pm 0.7$</td>
<td>$3.4 \pm 0.5$</td>
<td>$0.067$</td>
</tr>
<tr>
<td>Care partner-reported relationship quality ($↑ = worse$)</td>
<td>$3.3 \pm 0.6$</td>
<td>$3.4 \pm 0.7$</td>
<td>$3.1 \pm 0.7$</td>
<td>$3.5 \pm 0.4$</td>
<td>$0.210$</td>
</tr>
<tr>
<td>Incongruent appraisal of patient pain interference ($↑ = worse$)</td>
<td>$0.6 \pm 0.7$</td>
<td>$0.3 \pm 0.4$</td>
<td>$0.9 \pm 0.9$</td>
<td>$0.6 \pm 0.7$</td>
<td>$0.041$</td>
</tr>
<tr>
<td>Incongruent appraisal of patient fatigue ($↑ = worse$)</td>
<td>$0.6 \pm 0.4$</td>
<td>$0.5 \pm 0.4$</td>
<td>$0.6 \pm 0.4$</td>
<td>$0.7 \pm 0.5$</td>
<td>$0.225$</td>
</tr>
<tr>
<td>Incongruent appraisal of patient dyspnea ($↑ = worse$)</td>
<td>$0.6 \pm 0.6$</td>
<td>$0.6 \pm 0.6$</td>
<td>$0.5 \pm 0.6$</td>
<td>$0.7 \pm 0.6$</td>
<td>$0.457$</td>
</tr>
<tr>
<td>Social/familial characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient-reported social/family support ($↑ = worse$)</td>
<td>$69.1 \pm 10.9$</td>
<td>$72.5 \pm 7.5$</td>
<td>$63.9 \pm 12.5$</td>
<td>$71.0 \pm 10.7$</td>
<td>$0.028$</td>
</tr>
<tr>
<td>Care partner-reported social/family support ($↑ = worse$)</td>
<td>$62.8 \pm 17.3$</td>
<td>$65.2 \pm 18.6$</td>
<td>$57.3 \pm 19.8$</td>
<td>$65.5 \pm 13.1$</td>
<td>$0.247$</td>
</tr>
</tbody>
</table>

HF, heart failure; NYHA, New York Heart Association.

$^a$ ANOVAs for continuous variables and Pearson’s chi-square test for categorical variables.

Identifying Patterns of Dyadic Health

Design & Methodological Considerations

• At what level is the concept/outcome of interest?
  – Individual (e.g., quality of life)?
  – Dyadic (e.g., relationship quality, incongruence, pattern of dyadic health)?

• Are we interested in the outcomes of a dyad or individual?

• Are we interested in interdependence and/or transaction?

• Which dyad are we interested in? Which care partner or family member?
Design & Methodological Considerations

- Proxy reports were traditionally included in research as substitutions for the person with dementia or other illness.
  - Dyadic appraisal research has invalidated this assumption.
  - Proxy data needs to be called what it really is – someone else’s perception of a phenomenon and should not be used in dyadic research as anything else.
Design & Methodological Considerations

• Including a dyadic-level predictor does not make a study dyadic.

• Examining PLWD variables as predictors of care partner outcomes in an individual-level analysis does not make a study dyadic.
  – But these can be important first steps towards dyadic research.
Design & Methodological Considerations

• Dyadic analysis requires the same outcomes for the PLWD & care partner and measures must be equivalent.
  – Otherwise we cannot untangle differential effects from differential measures. Is the difference due to differences between members of the dyad on the concept or differences in measures used?

• Be wary of using averages in dyadic appraisal/incongruence research.

• Don’t underestimate PLWD in mild-moderate stages
  – Use strategies to maximize their participation & include their voice/perception.
Design & Methodological Considerations

• When designing interventions, consider whether your target for change is the dyad, PLWD or care partner?
  – What interpersonal mechanisms are you including to explain change or transaction within the dyad?
  – How are you evaluating whether the intervention worked for one, none, both?
Role of Family & Culture

• Dyadic research is a sub-type of family research.

• Important to remember that not all families or cultures take a dyadic approach to illness.
Role of Family & Culture

• Not all cultures, races, ethnicities frame the care experience in the same way (even within groups)
  – Using methods and theories that explicate the variability within and across groups is vital to advance understanding.
  – Acknowledging that relationships may be conceptualized differently.
  – Some families will work as family systems; some will work as several dyadic units; some will work around a primary dyad.
  – Members of the same dyad may define “good” outcomes differently from one another – this makes the move towards “balancing needs of the dyad” all the more important.
Take-Homes

• A dyadic approach is needed to understand how two people navigate and experience illness and to optimize the health of both members.

• Dyads vary greatly in how they experience illness within & across groups.

• Don’t just chase the methods. Follow the theory and the question.

• Theory will guide the unit of focus, the concepts we examine, the measures that need to be developed, the mechanisms we design our interventions around, and how we evaluate successful interventions.

• Allow theory to guide methodological innovations.

• We cannot advance the field of dyadic science without appropriate use of theory and methods that balance the needs of both members of the care dyad.
Remember

• Dyadic science is a specialized area of research.
  – Assume that you will always have at least one dyadic expert as a reviewer.

• Dyadic research is not for everyone and it is not always the answer to the question or appropriate in all families and contexts.
  – But it is incredibly rewarding and changes the way you view illness & health.
  – Dyad as unit of care.
Questions?