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Authors

Lyons, Karen S

Lee, Christopher S

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**Karen S. Lyons, PhD, FGSA¹,
and Christopher S. Lee, PhD, RN, FAHA, FAAN,
FHFA¹**

Abstract

Despite the importance of both members of the adult patient–care partner dyad, a majority of research on illness management is focused on the patient or the care partner. The basic principle of the Theory of Dyadic Illness Management is that illness management is a dyadic phenomenon; the theory focuses extensively on the dyad as an interdependent team. The way dyads appraise illness as a unit influences the ways in which they engage in behaviors to manage illness together in a recursive fashion that influences dyadic health. Optimizing the health of both members of the dyad is a goal of the theory. In turn, the health of the dyad can feedback to influence how they appraise and manage illness together. Finally, dyadic illness management is an inherently variable process that is influenced by several contextual factors. Supportive evidence and implications for practice and future research are presented.

Keywords

dyadic appraisal, dyadic management, dyadic health

There is over a decade of empirical and theoretical evidence to support the importance of considering both members of the adult patient–care partner dyad in the context of human illness. A majority of research on illness management,

¹Oregon Health & Science University, Portland, USA

Corresponding Author:

Karen S. Lyons, Associate Professor and PhD Program Director, School of Nursing,
Oregon Health & Science University, 3455 SW U.S. Veterans Rd., SN-ORD, Portland,
OR 97239, USA.

Email: lyonsk@ohsu.edu

however, has focused on the involvement of the patient in isolation, or to a lesser extent the involvement of informal care partners (mainly spouses and adult children). Similarly, most illness/symptom management theories are largely patient-centric and focused on true self-management (Dodd et al., 2001; Riegel, Jaarsma, & Stromberg, 2012), whereas caregiving theories often focus on the appraisal, provision, and strain of care to the patient (Fletcher, Miaskowski, Given, & Schumacher, 2012; Lazarus & Folkman, 1984; Pearlin, Mullan, Semple, & Skaff, 1990). In contrast, family theories of illness, particularly family nursing theories, are advantageous in incorporating the complexity of family systems and multiple family members (Grey, Schulman-Green, Knafl, & Reynolds, 2015; Ryan & Sawin, 2009) but have focused predominantly on the family's response to a child with illness, with either the individual child or family functioning as core outcomes (Knafl, Deatrick, & Gallo, 2008; Knafl, Deatrick, & Havill, 2012; Knafl et al., 2013). Theories that have an explicit dyadic focus, such as the developmental-contextual model of couples coping with chronic illness (Berg & Upchurch, 2007), are centered on couples' response to illness, with dyadic coping (e.g., emotional support and communication) as a central theme (Badr & Acitelli, 2017; Regan et al., 2015; Revenson & DeLongis, 2011).

Independently, existing illness management, caregiving, family, and dyadic coping theories have informed several lines of important research, including our own, that have been operationalized in relative isolation. Indeed, and with few exceptions, the dyadic coping literature has been carried out fairly separately from caregiving research despite recognition that caregiving is a dyadic process (Fletcher et al., 2012; Lyons, Zarit, Sayer, & Whitlatch, 2002; Northouse, 2012; Revenson et al., 2016; Sebern, Brown, & Flatley-Brennan, 2016). As such, there has been limited integration of dyadic science into illness management and caregiving research, which has limited our understanding of how adult patient-care partner dyads manage illness together and the impact dyadic management has on their health as a unit. The purpose of this article is to detail the central principles of a new theory that integrates dyadic science into illness management: the Theory of Dyadic Illness Management. An overview of the theory is presented first, followed by definitions of key principles along with empirical examples that are provided to help operationalize the theory. Finally, several lines of future inquiry related to the Theory of Dyadic Illness Management are outlined so that this new theory can undergo sufficient testing and modification by multiple research teams across multiple illness contexts.

Overview of the Theory

The basic principle of the Theory of Dyadic Illness Management is that illness management is a dyadic phenomenon (Figure 1). Explicitly, this theory moves

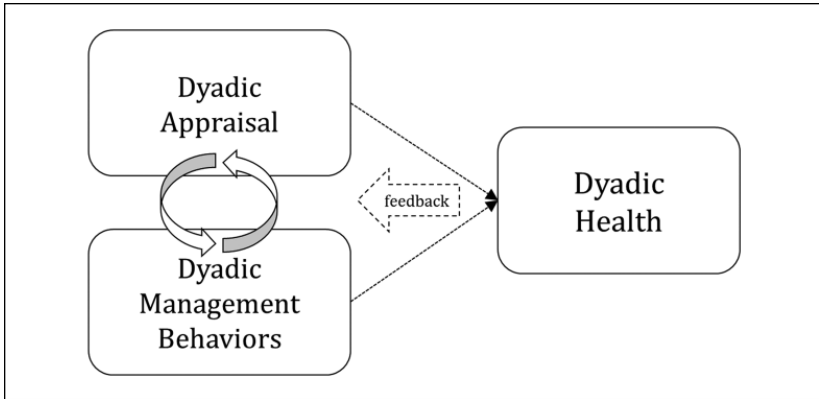


Figure 1. Central elements of the Theory of Dyadic Illness Management.

beyond the individual patient and care partner responses to illness and focuses extensively on the dyad as an interdependent team. The way dyads appraise illness as a unit influences the ways in which they engage in behaviors to manage the full course of illness together. Furthermore, dyadic appraisal and dyadic management behaviors have a recursive association over time, with both influencing the health of the dyad. The health of both members of the dyad is assumed to inherently covary. In turn, the health of the dyad, particularly over time, can feedback to influence how the patient and care partner appraise and manage illness together. Optimizing dyadic health is a central goal of the theory. Finally, given that dyadic management is an inherently variable process that may differ by stage of illness, type of dyad, available support, and cultural influence, the existence and explication of heterogeneity is a central principle guiding the theory and related lines of inquiry.

Illness Management as a Dyadic Phenomenon

Patients and their informal care partners experience and navigate illness together. Hence, the dyadic perspective (i.e., the dyad is the target of inquiry and intervention) that is central to this theory can help to uncover the transactional and interdependent nature of the dyad and more naturally lead to efforts that foster collaboration and balance needs within the dyad and build on these existing familial relationships to benefit dyadic health. Importantly, a dyadic perspective of illness management focuses on the dyad as a team and on optimizing the health of the dyad itself, while simultaneously the health of each member is both considered and held in appropriate balance. Such considerations are not possible with an individual lens. Simply put, our dyadic

perspective on illness management moves beyond individual patient versus care partner health to view appraisal, management behaviors, and health at the level of the dyad.

There are many research studies that are patient-centric and involve care partner-level factors that are not dyadic in approach. Similarly, there are many research studies that are care partner-centric and involve patient-level factors that are not dyadic in approach. We choose to highlight some of our own work as examples to be transparent that not all aspects of our program of research are dyadic. First, we provided evidence that care partner strain was associated with event-free survival in heart failure (Bidwell, Vellone, et al., 2017). This article was among the first to show that a care partner-level factor influenced survival in heart failure; but, as the dyad was not the unit of analysis, this approach was not dyadic in nature. Second, we have also provided evidence that patient symptoms in Parkinson's disease influence care partner depression (Carter, Stewart, Lyons, & Archbold, 2008) and that the quality of the relationship with the patient and stage of Parkinson's disease influence care partner strain (Lyons, Stewart, Archbold, & Carter, 2009). Although these studies provided important insights about the interpersonal context of illness, neither study was dyadic in nature. As key examples of studies that are dyadic, we have examined the ways in which members of the dyad work together to manage heart failure with the dyad as the explicit unit of analysis (Lee et al., 2015), and we have looked at longitudinal dyadic health (i.e., simultaneous examination of depressive symptoms within the dyad) in lung cancer (Lyons, Bennett, et al., 2014).

Dyadic Appraisal

A key principle of the Theory of Dyadic Illness Management is that a dyadic perspective on illness appraisal moves beyond the role of individual appraisal of symptoms by either patient or care partner and well beyond an emphasis on proxy evaluation. Thus, a truly dyadic perspective of symptom appraisal implies no "gold standard" or "correct" respondent. Instead, the incongruence in appraisal of illness (i.e., the gap between patient and care partner in both magnitude and direction of difference) becomes the focus from conceptualization through analysis and interpretation. In a simple way, the focus of this theory shifts from the degree of symptom severity to the degree to which the members of the dyad are on the same page with respect to illness appraisal. Hence, shared appraisal within the dyad plays a central role in optimizing dyadic management behaviors and dyadic health. For example, in heart failure, it may be that similar appraisal of symptoms leads to more collaborative engagement in illness management and therefore better outcomes for both

members of the dyad. Moreover, dyadic appraisal of illness has been found to vary by symptom, stage of illness, and type of dyad as well as other contextual factors (Cano, Johansen, & Franz, 2005; Li & Loke, 2014; Lyons, Lee, et al., 2014; McPherson, Wilson, Lobchuk, & Brajtman, 2008); again emphasizing the importance of incorporating heterogeneity.

Beyond symptoms, another area of dyadic appraisal that fits well into this theory involves care values and preferences. For example, in the setting of dementia, there is a frequent disconnect between the care values of the person living with dementia and the family member who may eventually be charged with communicating and representing those values and preferences in care planning and decision making, particularly in advanced stages. This very disconnect in appraisal of care values has been shown in samples of community-based and hospitalized older adults (Miller, Whitlatch, Lee, & Lyons, 2017; Moon, Townsend, Whitlatch, & Dilworth-Anderson, 2017; Reamy, Kim, Zarit, & Whitlatch, 2011). The reason why incongruence in appraisal of care values and preferences between the person with dementia and their care partner is so important compared with the individual patient and care partner appraisals of those values and preferences is because one of the goals of dementia care is to get both members of the dyad on the same page so that decisions and care planning are in better alignment with the wishes of the patient, and simultaneously empower the care partner to make those decisions when needed (Orsulic-Jeras, Whitlatch, Szabo, Shelton, & Johnson, 2016; Whitlatch, Judge, Zarit, & Femia, 2006). Irrespective of the focus of illness appraisal, a key assumption of the theory is that shared dyadic appraisal (less incongruence) leads to better dyadic management and in some instances directly to better dyadic health.

Dyadic Management Behaviors

The Theory of Dyadic Illness Management focuses on a spectrum of collaboration in how the dyad manages illness together based on the needs of both the patient and care partner; something not often integrated in other theories. At the lower end of the collaboration spectrum entails one member of the dyad engaged in all illness management behaviors independently. In contrast, the higher end of the collaboration spectrum entails the many forms of shared management with both members of the dyad engaged in behaviors to varying degrees to optimally promote dyadic health. As such, management behaviors are fundamentally a dyadic concept in this theory that encompass the various ways members of the dyad work as a unit even if that means one person is doing almost everything. Behaviors related to dyadic management include decision making, managing changes in function or worsening signs and

symptoms, and general health behaviors of both members. Care planning also can occur at the level of the dyad both in terms of cocreating the plan and also actualizing goals of care as a team, particularly when the needs of both members of the dyad are balanced effectively (Orsulic-Jeras et al., 2016).

Each of these management behaviors can be viewed across a spectrum of collaboration regarding who is doing what to manage the illness and with what degree of collaboration, for example, shared versus surrogate decision making or similar versus complementary engagement in care tasks, symptom management, and healthy behaviors (e.g., physical activity, diet). Indeed, heterogeneity among dyads in management behaviors has led to inquiry into distinct dyadic types both in qualitative and quantitative research (Buck, Kitko, & Hupcey, 2013; Lee et al., 2015).

Irrespective of the approach chosen to learn from heterogeneity in dyadic management behaviors, a central assumption of the Theory of Dyadic Illness Management is that natural dispersion among dyads should be considered and that in many instances, the average illness dyad is both fictitious and meaningless in driving effective interventions and care. Relatedly, our dyadic perspective on illness management behaviors cannot ignore the needs of the care partner; hence, how the members of the dyad work as a unit to optimize dyadic health, not just patient health, is another important principle of this theory. A key assumption of the theory related to dyadic management behaviors is that greater collaboration (not necessarily meaning equal contributions) leads to better dyadic health.

Dyadic Health

Dyadic health, both physical and mental, is a central focus of this theory as we believe the health of both members of the dyad needs to be prioritized and held in effective balance. Physical and mental health of both members of the dyad are inextricably linked and are known to covary (Hagedoorn, Sanderman, Coyne, Bolks, & Tuinstra, 2008; Lyons, Bennett, et al., 2014; Pruchno, Wilson-Genderson, & Cartwright, 2009; Pucciarelli et al., 2017; Vellone et al., 2014). Indeed, in the case of older couples (particularly those where both members experience multiple comorbidities), the designation of patient and care partner can often be arbitrary and dictated by the goals of the particular study rather than the lived experience. This, in turn, can unintentionally lead to a minimization of the reality of health needs of both members. By focusing on dyadic health, we acknowledge the complexity of roles within dyads and also do not hold the health of one member of the dyad as being more important than the other.

Although many studies have examined dyadic phenomena and aspects of care relationships, they predominantly focus on either patient or care

partner as outcome. Such studies have informed dyadic science and in particular the important role of interpersonal factors, but they are not true dyadic studies and are, therefore, limited in their ability to address the needs of both members. In some cases, both members of the dyad are included in the study but are examined separately; again hindering understanding of the impact of illness on the dyad as an interdependent (often familial) unit. If we continue to focus on patient and care partner separately, we cannot know how to best optimize dyadic health nor support the dyad in balancing their needs. Rather, we perpetuate an artificial reduction of a preexisting familial unit into clinical roles of patient or care partner, thereby missing an important aspect of the illness (and care) experience. A common example of dyadic health is quality of life. In this way, this theory moves away from thinking about quality of life at the level of the individual patient or care partner and holds the dyad as the central unit of consideration and analysis.

Finally, dyadic health can influence how the dyad appraises and manages illness over time. In particular, both patient and care partner's depressive symptoms and care partner strain have been noted as influences on both dyadic appraisal and dyadic management (Heid, Bangerter, Abbott, & Van Haitsma, 2017; Lee et al., 2017; Lee et al., 2015; Lyons, Jones, Bennett, Hiatt, & Sayer, 2013; Northouse, Williams, Given, & McCorkle, 2012; Reamy et al., 2011; Winters-Stone, Lyons, Bennett, & Beer, 2014). Hence, there is inherent feedback of dyadic health (and patient- and care partner-specific health) on dyadic appraisal and management that is important to acknowledge and address throughout the illness trajectory.

Risk and Protective Contextual Factors

In addition to the three central concepts of our theory (dyadic appraisal, dyadic management, and dyadic health), we purport there are several key contextual factors that may be a risk or protective influence on dyadic appraisal and management behaviors and may be stable or dynamic in their influence over time (Figure 2). By risk factors, we mean a factor that contributes to greater incongruence in appraisal and less collaboration in dyadic management behaviors. In contrast, protective factors are those that contribute to greater shared appraisal and more collaborative management behaviors. These contextual factors are categorized further at the individual, dyad, family/social, or cultural levels to represent the various contexts within which the patient and care partner are situated. Examples of individual factors (either patient or care partner) that are influential on dyadic appraisal and

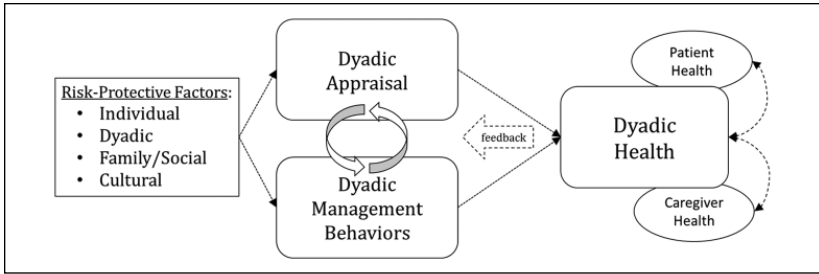


Figure 2. Theory of Dyadic Illness Management with predictors.

dyadic management behavior include demographics such as age and gender of the patient and care partner, specific illness contexts and illness severity/stage, and comorbid conditions of both members of the dyad (Bidwell et al., 2015; Heid et al., 2017; Lobchuk & Degner, 2002; McPherson et al., 2008; Reamy et al., 2011). Relationship type (i.e., spousal or adult child), relationship quality, communication within the dyad, and dyadic confidence (i.e., confidence within and/or of the dyad to manage the illness) are key contextual factors at the level of the dyad (Fletcher et al., 2012; Hooker, Grigsby, Riegel, & Bekelman, 2015; Li & Loke, 2014; Lyons, Gelow, et al., 2017; Lyons et al., 2002; McPherson et al., 2008; Skerrett, 2003).

Within the next context dyads are nested in, social support is the largest and most protective conceptual factor, in particular the support from family and friends. Another family-level factor that adds to the complexity of dyadic appraisal and management, but has often tripped up caregiving theories and research, is the direct involvement and influence of other family members in the provision of care. Few patients have one sole care partner, especially if that primary care partner is a spouse and experiencing their own health concerns. Indeed, involvement of multiple family members and cocaregiving is normative within certain families and cultures. By explicitly examining support from family, family expectations and beliefs, and direct involvement in care from other family members (Årestedt, Benzein, & Persson, 2015; Bell & Wright, 2015; Knafl et al., 2013; Pinquart & Sorensen, 2005), we hope to move closer to understanding the role the broader family has on how the patient–primary care partner appraise and manage illness together. For instance, who is the recipient of the support from family—the patient, care partner, or the dyad?

In addition to the important cultural context that may influence dyadic appraisal and management, there are also elements of the culture of health care that can serve as risk or protective factors. For example, nearly all care

delivery is patient-centric, despite the advantages of family-focused care (Bell & Wright, 2015), and few consider the dyad as the unit of care (Northouse, 2012). The theory acknowledges these salient higher level contextual influences on the dyad with the goal of promoting important lines of inquiry.

Role of Patient- and Caregiver-Specific Health Within the Dyad

Although the primary focus of this theory is dyadic health, strengths of the theory are the acknowledgment that the health of patients and care partners is interdependent and that patient- and care partner-specific outcomes must be viewed with a dyadic lens to understand fully the costs as well as rewards and meaning associated with illness management (Figure 2). Keeping the dyadic perspective on health also keeps in the forefront balance between the health of both members of the dyad such that benefits of shared appraisal and collaborative management behaviors are not appreciated by either the patient or the care partner in isolation. Of course, there are measures of health that are patient- or care partner-specific, such as clinical event-risk and condition-specific quality of life or care partner strain and rewards/meaning, respectively, which are not measured in common but are important areas of study to understand the full impact of dyadic illness management and interventions targeted at the dyad. The ideal, according to this theory, however, is to focus on dyadic health whenever possible, and patient- or care partner-specific outcomes are secondary and only complementary to dyadic health. A good example of striving for balance that does not necessarily mean the health of both members improves would naturally be end-of-life. Another example is in the study of interventions where patient health improves but the health of the care partner worsens; we have observed this in advanced heart failure with mechanical circulatory support where patients have dramatic improvements in quality of life, but the quality of life among their care partners worsens considerably (Bidwell, Lyons, et al., 2017). Hence, success of interventions can look different depending on the target of inquiry.

Supportive Evidence

Dyadic Appraisal

Across illness populations, most studies on dyadic symptom appraisal have identified moderate gaps in how patients and care partners appraise patient symptoms, with the majority of studies reporting care partners rating symptoms worse than patients living with the condition under study (Cano et al.,

2005; Janssen, Spruit, Wouters, & Schols, 2012; McPherson & Addington-Hall, 2003; Quinn, Dunbar, Clark, & Strickland, 2010; Retrum, Nowels, & Bekelman, 2013). Incongruence is generally smaller regarding more observable phenomena like physical function and greater for more subjective symptoms like pain or fatigue (Lyons, Lee, et al., 2014; McPherson & Addington-Hall, 2003). In our work, we have studied dyadic appraisal of symptoms, function, and barriers to care in chronic pain, heart failure, cancer, stroke, and frail older adults (Lee et al., 2017; Lyons et al., 2013; Lyons, Lee, et al., 2014; Lyons et al., 2002; McCarthy & Lyons, 2015; Winters-Stone et al., 2014). Generally, we found care partners rated symptom severity worse except in chronic pain, where the majority of patients were female (Lyons et al., 2013). Collectively, we have observed several risk (e.g., younger patient age) and protective (e.g., relationship quality, communication) factors to be associated with incongruence in dyadic appraisal. We detail two specific examples of our dyadic appraisal work below.

First, in studying dyads managing lung cancer, we focused extensively on patient and care partner appraisal of patient symptoms (i.e., pain severity, dyspnea, and fatigue) and physical function over time. We used multilevel modeling to explicate variability in incongruence using two second-order variables (i.e., magnitude and direction of gap between patient and care partner) in symptoms and physical function appraisal within and across dyads. This remains one of the few longitudinal studies of dyadic symptom appraisal (Lyons, Lee, et al., 2014). Supporting our central principle of heterogeneity across dyads, the salient findings were that dyadic appraisal varied across symptoms and function (i.e., incongruence regarding physical function significantly declined over time compared with incongruence regarding all three patient symptoms), across dyads (i.e., there was significant variability around average trajectories of incongruence, except for fatigue), and across time (i.e., incongruence trajectories for patient pain severity and dyspnea were quadratic, but incongruence over time for patient fatigue was linear). Although it is not always the case, in this sample of dyads, care partners rated symptoms worse than did the patients. Finally, type of dyad (i.e., nonspousal) and more concealment by the patient were two risk factors associated with greater incongruence regarding patient pain severity at baseline (Miller, Lyons, & Bennett, 2015).

Second, in studying heart failure dyads, we examined how patients and care partners appraise patient symptoms of dyspnea, fatigue, and pain. Again, we used multilevel modeling to understand the incongruence in dyadic symptom appraisal both in magnitude and direction of difference. In general, care partners rated symptoms worse than did the patients. However, because of extensive heterogeneity in dyadic symptom appraisal across all three symptoms, we

used latent class mixture modeling to identify subgroups of dyads based exclusively on incongruence in dyadic symptom appraisal. In so doing, we identified two types of heart failure dyads: one, where care partners appraised patients' symptoms as being significantly worse than did the patient, and a second where patients appraised their symptoms similar to or worse than the appraisal by their care partner (Lee et al., 2017). In addition, we found several risk and protective factors associated with membership in each of these two groups (i.e., illness factors, care partner age, and family support).

As mentioned, another important area of study is incongruence in care values and preferences in dementia. For example, our team has provided evidence that dementia care partners underestimate the importance the person with dementia places on care values, and this incongruence is related to greater relationship strain between the patient and care partner (Miller et al., 2017). Others also have shown that dementia care partners consistently underestimate the importance of care values and everyday preferences to the person with dementia; more similar appraisal has been associated with African American care partners and care partners who perceive greater involvement of the patient in management behaviors (among other factors; Heid et al., 2017; Reamy et al., 2011).

Dyadic Management

Compared with the study of dyadic appraisal, how adult dyads actually manage illness together is more of an emerging area of inquiry. More traditionally, management behaviors are examined individually (e.g., patient self-management, care tasks, caregiver self-care), or the goal of inquiry is dyadic coping (e.g., emotional support and communication within the dyad) as distinct from illness management behaviors.

We have studied dyadic management most extensively in the context of heart failure. Most simply, we have examined variability and predictors of dyadic management of heart failure (i.e., simultaneous examination of patient-reported self-care management behaviors and care partner's contributions to self-care management within dyads). Specifically, we used multilevel modeling to examine the dyadic contributions to heart failure management controlling for the interdependence between patients and their care partners. Both patients and their care partners engaged in low levels of management behaviors. There were several risk and protective factors associated with dyadic management including gender, duration of illness, illness severity (individual-level factors), type of dyad and relationship quality (dyad-level factors), and social support (family/social support-level factor; Bidwell et al., 2015). In a separate study, we found patients and their care partners had

moderate levels of collaboration in heart failure management behaviors (i.e., symptom response and consulting behaviors) and low collaboration in heart failure maintenance behaviors (patients engaged in these behaviors significantly more than their care partner). Patient gender (individual-level factor) and dyadic confidence (dyad-level factor) were associated with dyadic management (Lyons, Gelow, et al., 2017).

At a basic level, inquiry into dyadic management should adjust for the interdependence between members of the dyad (like the examples above), whereas more sophisticated approaches might entail focusing on the level and type of dyadic collaboration. As an example, and because management varies tremendously among dyads, we integrated multilevel and growth mixture modeling to identify three common typologies based on dyadic heart failure management. In a “novice and complementary” dyad, patients and care partners contributed to different aspects of heart failure self-care, and self-care was generally poor. In an “inconsistent and compensatory” dyad, care partners reported greater contributions to the areas of self-care, most insufficient on the part of the patients. Finally, in an “expert and collaborative” dyad, there were high contributions by both members to all aspects of heart failure self-care. Others have shown that identifying typologies of dyadic management can help gain insight into the degree and specific elements of dyadic collaboration using a qualitative approach (Buck et al., 2013; Ward-Griffin, Oudshoorn, Clark, & Bol, 2007).

An emerging area of dyadic management is the focus on exercise in prostate cancer recovery. The “Exercising Together” study used an interventional approach where the dyadic management behavior was partnered strength training. Specifically, patients and their care partners in the trial exercised in tandem (as opposed to synchronous yet separate exercise) and were required to interact physically and verbally, as a team, during the exercises with an ultimate goal to improve the physical and mental health of both members of the dyad (Winters-Stone et al., 2016; Winters-Stone, Lyons, Nail, & Beer, 2012). Another area of inquiry related to dyadic management is shared decision making and dyadic care planning in dementia (Miller, Whitlatch, & Lyons, 2016; Orsulic-Jeras et al., 2016; Whitlatch et al., 2006).

Dyadic Appraisal and Dyadic Management

We believe that shared appraisal within the dyad plays a central role in optimizing dyadic management behaviors. We have observed a key example to support this in the context of heart failure. Specifically, dyads wherein the care partner appraised symptoms as being worse than the patient had better dyadic management overall compared with dyads where the patient appraised symptoms

worse than perceived by the care partner (Lee et al., 2017). Another key example is in dementia where interventions that are geared toward optimizing dyadic appraisal of patient's preferences and care values improve shared decision making and care planning (Orsulic-Jeras et al., 2016). Although research is lacking in examining the lagged effect of dyadic management on dyadic appraisal, our theory purports that with greater collaboration around illness management (particularly with regard to symptom management) over time, the dyad may experience more shared appraisal of symptoms.

Dyadic Health

As mentioned previously, physical and mental health of both members of a dyad are inextricably linked. Dyadic science has for more than a decade focused on dyadic health most frequently using methods like the Actor–Partner Interdependence Model (Kenny, Kashy, & Cook, 2006) or related dyadic methodologies (Lyons, Sayer, Archbold, Hornbrook, & Stewart, 2007; Raudenbush, Brennan, & Barnett, 1995; Sayer & Klute, 2005) with the majority of this work occurring in the illness context of cancer. In our own work, we have examined health at the unit of the dyad longitudinally in the context of stroke (Pucciarelli et al., 2017) and lung cancer (Lyons, Bennett, et al., 2014), and also cross sectionally in heart failure (Lyons, Hiatt, et al., 2017) among other contexts.

Integration of Concepts

As shown in Figure 1, dyadic appraisal and dyadic management behaviors are considered to influence dyadic health. As an empirical example, we examined the influence of dyadic appraisal on dyadic health in lung cancer. We found greater incongruence in appraisal of patient fatigue was associated with worse care partner mental quality of life but did not significantly influence patient mental quality of life (Lyons, Miller, & McCarthy, 2016). Others have shown that incongruence regarding the person with dementia's care values is associated with worse quality of life for both members of the dyad (Moon et al., 2017). In prostate cancer, greater incongruence in patient symptom appraisal was associated with worse quality of life for both members of the dyad (Merz et al., 2011). Finally, with regard to the role of dyadic management on dyadic health, in heart failure we have shown that similar levels of engagement in heart failure management behaviors by patient and care partner were associated with lower depressive symptoms for care partners but were not associated significantly with patient depressive symptoms (Lyons, Hiatt, et al., 2017).

Implications for Practice and Future Research

We believe our newly proposed theory has several important implications for practice and future research. The theory firmly advocates for a dyadic perspective of illness within practice settings, or as Northouse (2012) eloquently described it, the patient–care partner dyad must be seen as the “unit of care.” Viewing the dyad as a unit of care enhances the ability of all health care providers, but particularly nurses, to heed the vulnerabilities that may accompany incongruent appraisals, low levels of collaboration, poor harmonization of needs, and imbalances of health within the dyad. Nurses have particular advantage in greatest contact with both members of the dyad, but also opportunity and skills necessary to assess both members, facilitate teamwork and collaboration (that is feasible), and reframe goals of care to promote shared goals for the dyad that will optimize dyadic health. Even in challenging circumstances (e.g., life-limiting illness, potential nursing home placement), a focus on harmonizing needs of the dyad, where possible, is important for both members.

Although our body of research and that of others provides supportive evidence for the theory, we propose several important lines of future inquiry to further test the theory’s utility. First, despite numerous studies of dyadic appraisal (particularly with regard to patient symptoms), more research is required to understand how dyadic appraisal changes over time with the course of illness and the recursive association with dyadic management. Second, the theory calls for studies of dyadic management across an array of behaviors with particular attention to how dyads collaborate and balance the needs of both members. The ways dyadic management and collaboration change with the course of illness and influence dyadic health are important elements of the theory, as yet understudied. Third, in addition to the existing methods that examine health within the dyad, the theory encourages greater emphasis on the health of the dyad as a unit, and balance of health within the unit. Future research is needed that employs innovative methods that identify dyads where both members are simultaneously experiencing positive outcomes (albeit not necessarily equally) in contrast to those where only one member or neither member is doing well. Greater integration of the dyad’s goals for health will be an important part of this future work. Finally, we believe the theory has an important role to play in driving future interventions to improve patient–care partner dyadic health. Moreover, the efficacy of such interventions that are not just dyad based (i.e., both members are included) but dyad focused (i.e., the dyad is the target) will shed light on the when, why, and for which dyads our interventions are beneficial or fall short.

It is our hope that this theory will advance the dyadic science of illness management by challenging researchers to pose new questions and lines of

inquiry, place greater focus on dyadic health and balance within dyads, develop innovative ways to operationalize dyadic concepts, and engage in broader exploration of the contextual influences (e.g., familial, cultural) within which the patient–care partner dyad is nested. It is through the many nuanced ways the theory is tested (both quantitatively and qualitatively) across illness contexts that we will know its strengths and limitations as a theoretical scaffold.

In sum, we propose a new theory that firmly places the adult patient–care partner dyad as the unit of focus. It is our hope that multiple research teams across multiple illness contexts will test the theory to further advance the dyadic science of illness management.

Authors' Note

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References

- Årestedt, L., Benzein, E., & Persson, C. (2015). Families living with chronic illness: Beliefs about illness, family, and health care. *Journal of Family Nursing, 21*, 206-231. doi:10.1177/1074840715576794
- Badr, H., & Acitelli, L. K. (2017). Re-thinking dyadic coping in the context of chronic illness. *Current Opinion in Psychology, 13*, 44-48. doi:10.1016/j.copsyc.2016.03.001
- Bell, J. M., & Wright, L. M. (2015). The Illness Beliefs Model: Advancing practice knowledge about illness beliefs, family healing, and family interventions [Editorial]. *Journal of Family Nursing, 21*, 179-185. doi:10.1177/1074840715586889

- Berg, C. A., & Upchurch, R. (2007). A developmental-contextual model of couples coping with chronic illness across the adult life span. *Psychological Bulletin*, *133*, 920-954. doi:10.1037/0033-2909.133.6.920
- Bidwell, J. T., Lyons, K. S., Mudd, J. O., Gelow, J. M., Chien, C. V., Hiatt, S. O., . . . Lee, C. S. (2017). Quality of life, depression, and anxiety in ventricular assist device therapy: Longitudinal outcomes for patients and caregivers. *Journal of Cardiovascular Nursing*, *32*, 455-463. doi:10.1097/JCN.0000000000000378
- Bidwell, J. T., Vellone, E., Lyons, K. S., D'Agostino, F., Riegel, B., Paturzo, M., . . . Lee, C. S. (2017). Caregiver determinants of patient clinical event risk in heart failure. *European Journal of Cardiovascular Nursing*, *16*, 707-714. doi:10.1177/1474515117711305
- Bidwell, J. T., Vellone, E., Lyons, K. S., D'Agostino, F., Riegel, B., Vela, R. J., . . . Lee, C. S. (2015). Determinants of heart failure self-care maintenance and management: A dyadic analysis. *Research in Nursing & Health*, *38*, 392-402. doi:10.1002/nur.21675
- Buck, H. G., Kitko, L., & Hupcey, J. E. (2013). Dyadic heart failure care types: Qualitative evidence for a novel typology. *Journal of Cardiovascular Nursing*, *28*, E37-E46. doi:10.1097/JCN.0b013e31827fcc4c
- Cano, A., Johansen, A. B., & Franz, A. (2005). Multilevel analysis of couple congruence on pain, interference, and disability. *PAIN®*, *118*, 369-379. doi:10.1016/j.pain.2005.09.003
- Carter, J. H., Stewart, B. J., Lyons, K. S., & Archbold, P. G. (2008). Do motor and nonmotor symptoms in PD patients predict caregiver strain and depression? *Movement Disorders*, *23*, 1211-1216. doi:10.1002/mds.21686
- Dodd, M., Janson, S., Facione, N., Faucett, J., Froelicher, E. S., Humphreys, J., . . . Taylor, D. (2001). Advancing the science of symptom management. *Journal of Advanced Nursing*, *33*, 668-676. doi:10.1046/j.1365-2648.2001.01697.x
- Fletcher, B. S., Miaskowski, C., Given, B., & Schumacher, K. (2012). The cancer family caregiving experience: An updated and expanded conceptual model. *European Journal of Oncology Nursing*, *16*, 387-398. doi:10.1016/j.ejon.2011.09.001
- Grey, M., Schulman-Green, D., Knafl, K., & Reynolds, N. R. (2015). A revised Self- and Family Management Framework. *Nursing Outlook*, *63*, 162-170. doi:10.1016/j.outlook.2014.10.003
- Hagedoorn, M., Sanderman, R., Coyne, J. C., Bolks, H. N., & Tuinstra, J. (2008). Distress in couples coping with cancer: A meta-analysis and critical review of role and gender effects. *Psychological Bulletin*, *134*, 1-30. doi:10.1037/0033-2909.134.1.1
- Heid, A. R., Bangerter, L. R., Abbott, K. M., & Van Haitsma, K. (2017). Do family proxies get it right? Concordance in reports of nursing home residents' everyday preferences. *Journal of Applied Gerontology*, *36*, 667-691. doi:10.1177/0733464815581485
- Hooker, S. A., Grigsby, M. E., Riegel, B., & Bekelman, D. B. (2015). The impact of relationship quality on health-related outcomes in heart failure patients and

- informal family caregivers: An integrative review. *Journal of Cardiovascular Nursing*, 30(4, Suppl. 1), S52-S63. doi:10.1097/JCN.0000000000000270
- Janssen, J. A., Spruit, M. A., Wouters, E. F. M., & Schols, J. M. G. A. (2012). Symptom distress in advanced chronic organ failure: Disagreement among patients and family caregivers. *Journal of Palliative Medicine*, 15, 447-456. doi:10.1089/jpm.2011.0394
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: Guilford.
- Knafl, K., Deatrck, J. A., & Gallo, A. M. (2008). The interplay of concepts, data, and methods in the development of the Family Management Style Framework. *Journal of Family Nursing*, 14, 412-428. doi:10.1177/1074840708327138
- Knafl, K., Deatrck, J. A., & Havill, N. (2012). Continued development of the Family Management Style Framework. *Journal of Family Nursing*, 18, 11-34. doi:10.1177/1074840711427294
- Knafl, K., Deatrck, J. A., Knafl, G. J., Gallo, A. M., Grey, M., & Dixon, J. (2013). Patterns of family management of childhood chronic conditions and their relationship to child and family functioning. *Journal of Pediatric Nursing*, 28, 523-535. doi:10.1016/j.pedn.2013.03.006
- Lazarus, R. S., & Folkman, S. (1984). *Stress appraisal and coping*. New York, NY: Springer.
- Lee, C. S., Mudd, J. O., Auld, J., Gelow, J. M., Hiatt, S. O., Chien, C. V., . . . Lyons, K. S. (2017). Patterns, relevance and predictors of heart failure dyadic symptom appraisal. *European Journal of Cardiovascular Nursing*, 16, 595-604. doi:10.1177/1474515117700760
- Lee, C. S., Vellone, E., Lyons, K. S., Cocchieri, A., Bidwell, J. T. D., Agostino, F., . . . Riegel, B. (2015). Patterns and predictors of patient and caregiver engagement in heart failure care: A multi-level dyadic study. *International Journal of Nursing Studies*, 52, 588-597. doi:10.1016/j.ijnurstu.2014.11.005
- Li, Q., & Loke, A. Y. (2014). A literature review on the mutual impact of the spousal caregiver-cancer patients dyads: "Communication," "reciprocal influence," and "caregiver-patient congruence." *European Journal of Oncology Nursing*, 18, 58-65. doi:10.1016/j.ejon.2013.09.003
- Lobchuk, M. M., & Degner, L. F. (2002). Symptom experiences: Perceptual accuracy between advanced-stage cancer patients and family caregivers in the home care setting. *Journal of Clinical Oncology*, 20, 3495-3507. doi:10.1200/JCO.2002.01.153
- Lyons, K. S., Bennett, J. A., Nail, L. M., Fromme, E. K., Dieckmann, N., & Sayer, A. G. (2014). The role of patient pain and physical function on depressive symptoms in couples with lung cancer: A longitudinal dyadic analysis. *Journal of Family Psychology*, 28, 692-700. doi:10.1037/fam0000017
- Lyons, K. S., Gelow, J. M., Hiatt, S. O., Mudd, J. O., Auld, J., Chien, C. V., & Lee, C. S. (2017). The role of dyadic confidence on engagement in heart failure care behaviors. *The Gerontologist*. Advance online publication. doi:10.1093/geront/gnx030

- Lyons, K. S., Hiatt, S. O., Gelow, J. M., Auld, J., Mudd, J. O., Chien, C., & Lee, C. S. (2017). Depressive symptoms in couples living with heart failure: The role of congruent engagement in heart failure management. *Aging & Mental Health*. Advance online publication. doi:10.1080/13607863.2017.1381945
- Lyons, K. S., Jones, K. D., Bennett, R. M., Hiatt, S. O., & Sayer, A. G. (2013). Couple perceptions of fibromyalgia symptoms: The role of communication. *PAIN®*, *154*, 2417-2426. doi:10.1016/j.pain.2013.07.018
- Lyons, K. S., Lee, C. S., Bennett, J. A., Nail, L. M., Fromme, E. K., Hiatt, S. O., & Sayer, A. G. (2014). Symptom incongruence trajectories in lung cancer dyads. *Journal of Pain and Symptom Management*, *48*, 1031-1040. doi:10.1016/j.jpainsymman.2014.02.004
- Lyons, K. S., Miller, L. M., & McCarthy, M. J. (2016). The roles of dyadic appraisal and dyadic coping in couples with lung cancer. *Journal of Family Nursing*, *22*, 493-514. doi:10.1177/1074840716675976
- Lyons, K. S., Sayer, A. G., Archbold, P. G., Hornbrook, M. C., & Stewart, B. J. (2007). The enduring and contextual effects of physical health and depression on care dyad mutuality. *Research in Nursing & Health*, *30*, 84-98. doi:10.1002/nur.20165
- Lyons, K. S., Stewart, B. J., Archbold, P. G., & Carter, J. H. (2009). Optimism, pessimism, mutuality, and gender: Predicting 10-year role strain in Parkinson's disease spouses. *The Gerontologist*, *49*, 378-387. doi:10.1093/geront/gnp046
- Lyons, K. S., Zarit, S. H., Sayer, A. G., & Whitlatch, C. J. (2002). Caregiving as a dyadic process: Perspectives from caregiver and receiver. *The Journals of Gerontology, Series B: Psychological Sciences*, *57*, P195-P204. doi:10.1093/geronb/57.3.P195
- McCarthy, M. J., & Lyons, K. S. (2015). Incongruence between stroke survivor and spouse perceptions of survivor functioning and effects on spouse mental health: A mixed-methods pilot study. *Aging & Mental Health*, *19*, 46-54. doi:10.1080/13607863.2014.913551
- McPherson, C. J., & Addington-Hall, J. M. (2003). Judging the quality of care at the end of life: Can proxies provide reliable information? *Social Science & Medicine*, *56*, 95-109. doi:10.1016/S0277-9536(02)00011-4
- McPherson, C. J., Wilson, K. G., Lobchuk, M. M., & Brajtman, S. (2008). Family caregivers' assessment of symptoms in patients with advanced cancer: Concordance with patients and factors affecting accuracy. *Journal of Pain and Symptom Management*, *35*, 70-82. doi:10.1016/j.jpainsymman.2007.02.038
- Merz, E. L., Malcarne, V. L., Ko, C. M., Sadler, M., Kwack, L., Varni, J. W., & Sadler, G. R. (2011). Dyadic concordance among prostate cancer patients and their partners and health-related quality of life: Does it matter? *Psychology & Health*, *26*, 651-666. doi:10.1080/08870441003721251
- Miller, L. M., Lyons, K. S., & Bennett, J. A. (2015). Incongruent perceptions of pain and physical function among families living with lung cancer. *Supportive Care in Cancer*, *23*, 2755-2762. doi:10.1007/s00520-015-2640-x
- Miller, L. M., Whitlatch, C. J., Lee, C. S., & Lyons, K. S. (2017). Incongruent perceptions of the care values of hospitalized persons with dementia: A pilot study of

- patient-family caregiver dyads. *Aging & Mental Health*. Advance online publication. doi:10.1080/13607863.2017.1280766
- Miller, L. M., Whitlatch, C. J., & Lyons, K. S. (2016). Shared decision-making in dementia: A review of patient and family carer involvement. *Dementia, 15*, 1141-1157. doi:10.1177/1471301214555542
- Moon, H., Townsend, A. L., Whitlatch, C. J., & Dilworth-Anderson, P. (2017). Quality of life for dementia caregiving dyads: Effects of incongruent perceptions of everyday care and values. *The Gerontologist, 57*, 657-666. doi:10.1093/geront/gnw055
- Northouse, L. L. (2012). Helping patients and their family caregivers cope with cancer. *Oncology Nursing Forum, 39*, 500-506. doi:10.1188/12.ONF.500-506
- Northouse, L. L., Williams, A. L., Given, B. A., & McCorkle, R. (2012). Psychosocial care for family caregivers of patients with cancer. *Journal of Clinical Oncology, 30*, 1227-1234. doi:10.1200/JCO.2011.39.5798
- Orsulic-Jeras, S., Whitlatch, C. J., Szabo, S. M., Shelton, E. G., & Johnson, J. (2016). The SHARE program for dementia: Implementation of an early-stage dyadic care-planning intervention. *Dementia*. Advance online publication. doi:10.1177/1471301216673455
- Pearlin, L. I., Mullan, J. T., Semple, S. J., & Skaff, M. M. (1990). Caregiving and the stress process: An overview of concepts and their measures. *The Gerontologist, 30*, 583-594. doi:10.1093/geront/30.5.583
- Pinquart, M., & Sorensen, S. (2005). Ethnic differences in stressors, resources, and psychological outcomes of family caregiving: A meta-analysis. *The Gerontologist, 45*, 90-106. doi:10.1093/geront/45.1.90
- Pruchno, R., Wilson-Genderson, M., & Cartwright, F. (2009). Self-rated health and depressive symptoms in patients with end-stage renal disease and their spouses: A longitudinal dyadic analysis of late-life marriages. *The Journals of Gerontology, Series B: Psychological Sciences, 64*, 212-221. doi:10.1093/geronb/gbp006
- Pucciarelli, G., Vellone, E., Savini, S., Simeone, S., Ausili, D., Alvaro, R., . . . Lyons, K. S. (2017). Roles of changing physical function and caregiver burden on quality of life in stroke: A longitudinal dyadic analysis. *Stroke, 48*, 733-739. doi:10.1161/STROKEAHA.116.014989
- Quinn, C., Dunbar, S. B., Clark, P. C., & Strickland, O. L. (2010). Challenges and strategies of dyad research: Cardiovascular examples. *Applied Nursing Research, 23*, e15-e20. doi:10.1016/j.apnr.2008.10.001
- Raudenbush, S. W., Brennan, R. T., & Barnett, R. C. (1995). A multivariate hierarchical model for studying psychological change within married couples. *Journal of Family Psychology, 9*, 161-174. doi:10.1037/0893-3200.9.2.161
- Reamy, A. M., Kim, K., Zarit, S. H., & Whitlatch, C. J. (2011). Understanding discrepancy in perceptions of values: Individuals with mild to moderate dementia and their family caregivers. *The Gerontologist, 51*, 473-483. doi:10.1093/geront/gnr010
- Regan, T. W., Lambert, S. D., Kelly, B., Falconier, M., Kissane, D., & Levesque, J. V. (2015). Couples coping with cancer: Exploration of theoretical frameworks from dyadic studies. *Psycho-Oncology, 24*, 1605-1617. doi:10.1002/pon.3854

- Retrum, J. H., Nowels, C. T., & Bekelman, D. B. (2013). Patient and caregiver congruence: The importance of dyads in heart failure care. *Journal of Cardiovascular Nursing, 28*, 129-136. doi:10.1097/JCN.0b013e3182435f27
- Revenson, T. A., & DeLongis, A. (2011). Couples coping with chronic illness. In S. Folkman (Ed.), *The Oxford handbook of stress, health, and coping* (pp. 101-123). New York, NY: Oxford University Press.
- Revenson, T. A., Griva, K., Luszczynska, A., Morrison, V., Panagopoulou, E., Vilchinsky, N., & Hagedoorn, M. (2016). *Caregiving in the illness context*. New York, NY: Palgrave Macmillan.
- Riegel, B., Jaarsma, T., & Stromberg, A. (2012). A middle-range theory of self-care of chronic illness. *Advances in Nursing Science, 35*, 194-204. doi:10.1097/ANS.0b013e318261b1ba
- Ryan, P., & Sawin, K. J. (2009). The Individual and Family Self-Management Theory: Background and perspectives on context, process, and outcomes. *Nursing Outlook, 57*, 217-225. doi:10.1016/j.outlook.2008.10.004
- Sayer, A. G., & Klute, M. M. (2005). Analyzing couples and families: Multilevel methods. In V. L. Bengtson, A. C. Acock, K. R. Allen, P. Dilworth-Anderson & D. M. Klein (Eds.), *Sourcebook on family theory and research* (pp. 289-313). Thousand Oaks, CA: SAGE.
- Sebern, M., Brown, R., & Flatley-Brennan, P. (2016). Shared care contributions to self-care and quality of life in chronic cardiac patients. *Western Journal of Nursing Research, 38*, 837-857. doi:10.1177/0193945915626877
- Skerrett, K. (2003). Couple dialogues with illness: Expanding the "we." *Families, Systems, & Health, 21*, 69-80. doi:10.1037/h0089503
- Vellone, E., Chung, M. L., Cocchieri, A., Rocco, G., Alvaro, R., & Riegel, B. (2014). Effects of self-care on quality of life in adults with heart failure and their spousal caregivers: Testing dyadic dynamics using the actor-partner interdependence model. *Journal of Family Nursing, 20*, 120-141. doi:10.1177/1074840713510205
- Ward-Griffin, C., Oudshoorn, A., Clark, K., & Bol, N. (2007). Mother-adult daughter relationships within dementia care: A critical analysis. *Journal of Family Nursing, 13*, 13-32. doi:10.1177/1074840706297424
- Whitlatch, C. J., Judge, K., Zarit, S. H., & Femia, E. (2006). Dyadic intervention for family caregivers and care receivers in early-stage dementia. *The Gerontologist, 46*, 688-694. doi:10.1093/geront/46.5.688
- Winters-Stone, K. M., Lyons, K. S., Bennett, J. A., & Beer, T. M. (2014). Patterns and predictors of symptom incongruence in older couples coping with prostate cancer. *Supportive Care in Cancer, 22*, 1341-1348. doi:10.1007/s00520-013-2092-0
- Winters-Stone, K. M., Lyons, K. S., Dobek, J., Dieckmann, N. F., Bennett, J. A., Nail, L. M., & Beer, T. M. (2016). Benefits of partnered strength training for prostate cancer survivors and spouses: Results from a randomized controlled trial of the Exercising Together project. *Journal of Cancer Survivorship, 10*, 633-644. doi:10.1007/s11764-015-0509-0
- Winters-Stone, K. M., Lyons, K. S., Nail, L. M., & Beer, T. M. (2012). The Exercising Together project: Design and recruitment for a randomized, controlled trial to determine the benefits of partnered strength training for couples coping with

prostate cancer. *Contemporary Clinical Trials*, 33, 342-350. doi:10.1016/j.cct.2011.10.015

Author Biographies

Karen S. Lyons, PhD, FGSA, is an associate professor and PhD program director at Oregon Health & Science University's School of Nursing in Portland, Oregon, USA. Her program of research focuses on family care dyad experiences of chronic and life-limiting illness. In particular, she has focused on how and why members of the care dyad are similar and different in their appraisals of patient symptoms and physical function and the impact of this incongruence on management of the illness and the health of patient and care partner. Her recent publications include "Depressive Symptoms in Couples Living With Heart Failure: The Role of Congruent Engagement in Heart Failure Management" in *Aging & Mental Health* (2017, with S. O. Hiatt et al.), "The Role of Dyadic Confidence on Engagement in Heart Failure Care Behaviors" in *The Gerontologist* (2017, with J. M. Gelow et al.), and "Symptom Incongruence Trajectories in Lung Cancer Dyads" in *Journal of Pain and Symptom Management* (2014, with C. S. Lee et al.).

Christopher S. Lee, PhD, RN, FAHA, FAAN, FHFSA, is the Carol A. Lindeman distinguished professor and assistant PhD program director at Oregon Health & Science University's School of Nursing in Portland, Oregon, USA. His program of research is focused on bio-behavioral influences on outcomes among adults with heart failure. In particular, he has focused on identifying previously unobserved clinical phenotypes including patient and patient-care partner dyads. His recent publications include "Patterns of Self-Care and Clinical Events in a Cohort of Adults With Heart Failure: 1 Year Follow-Up" in *Heart & Lung* (2017, with J. T. Bidwell et al.); "Patterns, Relevance and Predictors of Heart Failure Dyadic Symptom Appraisal" in *European Journal of Cardiovascular Nursing* (2017, with J. O. Mudd et al.); and "Patterns and Predictors of Patient and Caregiver Engagement in Heart Failure Care: A Multi-Level Dyadic Study" in *International Journal of Nursing Studies* (2015, with E. Vellone et al.).