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## **Examining how Congruence in and Satisfaction With Dyadic Care Type Appraisal Contribute to Quality of Life in Heart Failure Care Dyads**

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## Abstract

**Aims:** Given the complexity of heart failure (HF) management, persons with HF and their informal caregivers often engage in dyadic illness management. It is unknown how congruent appraisal of dyadic HF care type is associated with dyadic health. Our aim was to examine how congruence in and satisfaction with appraisal of dyadic HF care type contribute to quality of life (QOL) for dyads.

**Methods and results:** This is a secondary analysis of cross-sectional data on 275 HF care dyads (patients 45.1% female, caregivers 70.5% female). Congruent appraisal and satisfaction were assessed using the Dyadic Symptom Management Type instrument. Quality of life was measured using the Short Form-12. Multilevel dyadic models were estimated to examine the contribution of congruence and satisfaction with dyadic care type to physical and mental QOL. Congruent appraisal of dyadic care type was positively associated with caregivers' mental QOL ( $B = 2.69, p = .026$ ). Satisfaction with dyadic care type was positively associated with physical and mental QOL for persons with HF ( $B = 1.58, p = .011$  and  $B = 2.09, p = .002$ , respectively) and informal caregivers ( $B = 1.70, p = .004$  and  $B = 2.90, p < .001$ , respectively), while controlling for age, New York Heart Association class, daily hours spent together, relationship type, and congruence with dyadic care type.

**Conclusion:** Satisfaction with dyadic care type appraisal was a stronger contributor to QOL for HF care dyads, compared to congruent appraisals. It is important to understand reasons for dissatisfaction within the dyad to assist dyad members in reaching shared appraisals while managing HF.

**Keywords:** Heart failure, family caregiver, dyad, quality of life

## Introduction

Heart failure (HF) is a significant public health concern, with an estimated global prevalence of 64 million cases.<sup>1</sup> Persons with HF experience concurrent symptoms related to fluid overload, psychological discomfort, and cognitive difficulties, among others, which can limit their functional status and quality of life (QOL).<sup>2</sup> Given the complexity of the HF management regimen, persons with HF often receive help from family members or friends (referred to as *informal caregivers* throughout this article) with specific self-care activities, such as monitoring and recognizing symptoms, following diet and exercise recommendations, and managing medications.<sup>3</sup> Patient-caregiver (i.e., dyadic) partnerships are essential in the context of HF management. A significant body of work has documented the associations between dyadic relationships, chronic illness management, and health outcomes, whereby collaborative and supportive dyadic relationships are associated with better self-care and QOL, and lower caregiver burden, than dyadic relationships that are not collaborative and supportive.<sup>4-8</sup> As a next step, it is important to understand how persons with HF and informal caregivers perceive each other's roles and contributions to HF management, and whether their appraisal of each other's contributions has any health implications.

The theory of dyadic illness management provides the conceptual underpinnings to examine the interplay of dyadic appraisal and dyadic outcomes in the context of chronic illness.<sup>9</sup> Persons with chronic illness and their informal caregivers live within the chronic illness experience in transactional and interdependent ways. The theory supports that shared dyadic appraisals of the illness are associated with more collaborative illness management behaviors and better health outcomes for both members of the dyad than of dyads who did not have shared appraisals of the illness.<sup>9</sup> There are risk and protective contextual factors at the individual and dyad levels, including demographic characteristics, illness severity, comorbid conditions, relationship type, and relationship quality, which also contribute to dyadic appraisal and dyadic health.

Quality of life is a multidimensional construct that encompasses several health domains, including physical, mental, emotional, and social functioning.<sup>10</sup> Chronic illness influences the QOL of patients and their informal caregivers. Quality of life is impacted through the amount of time and resources patients allocate to managing their chronic illness and coping with any accompanying stress.<sup>11</sup> Caregivers also experience poor QOL due to the physical and emotional demands of their role.<sup>12</sup> Therefore, it is important to understand dyad-level factors that contribute to QOL among HF care dyads. Congruent appraisal of how dyad members manage HF might play a role in their QOL.

Early work about patient-caregiver incongruence in the context of HF management focused on exploring areas of incongruence in patient and caregiver perspectives about living with HF.<sup>13,14</sup> Incongruent perspectives emerged around identifying care needs, following clinician recommendations, seeking healthcare treatment, and making treatment-related decisions.<sup>13,14</sup> Dyads with incongruent views about living with HF reported greater distress at the individual level and conflict within the dyad than those with congruent views.<sup>13,14</sup> The existing research findings are based on a qualitative exploration of the concepts and do not address the perceived roles of each person towards HF management.

In a recent study, Bugajski *et al.*<sup>15</sup> found that congruence in dyadic care type appraisal (i.e., appraisal of who is responsible for HF management) is associated with significantly better patient symptom perception, whereas higher levels of caregiver satisfaction with dyadic care type appraisal are significantly associated with worse patient self-care maintenance and better patient self-care management. An examination of the influence of congruence in dyadic care type appraisal and satisfaction with dyadic HF management on QOL has not been previously conducted, to our knowledge.

It is unknown whether it is important for members of a dyad to agree in their appraisal of who (patient or caregiver) is responsible for HF management (congruence with dyadic care type appraisal) or to what degree they are satisfied with their perceived arrangement for HF management (satisfaction).

According to the Theory of Dyadic Illness Management,<sup>9</sup> congruent appraisal of dyadic care type is postulated to have implications for distal health outcomes, such as QOL for both the person with HF and their caregiver. Therefore, the purpose of this paper is to examine how congruence in appraisal of dyadic HF care type and satisfaction with the appraisal of dyadic care type contribute to QOL for persons with HF and their informal caregivers.

## **Methods**

### **Study Design**

This study was a secondary analysis of cross-sectional data originally collected to evaluate the psychometric characteristics of the Italian versions of the Self-Care of Heart Failure Index (SCHFI) version 7.2<sup>16</sup> and Caregiver Contribution to SCHFI (CC-SCHFI) version 2.<sup>17</sup> The Institutional Review Board at one of the participating recruitment sites (San Camillo Hospital, Rome) approved the study (approval number 2424/2016 – Lazio 1). All procedures were in accordance with the principles outlined in the Declaration of Helsinki. The Theory of Dyadic Illness Management<sup>9</sup> informed our choice of concepts and our focus on the association between dyadic appraisal and dyadic health, while accounting for individual- and dyad-level contextual factors.

### **Setting and Sample**

In the parent study, HF patient-caregiver dyads ( $n = 277$ ) were enrolled from several outpatient centers in central Italy during the period March 2017–January 2019. Patients were included if they were 18 years of age or older, reported a documented HF diagnosis according to the guidelines of the European Society of Cardiology,<sup>18</sup> with a New York Heart Association (NYHA) functional class of I to IV, and were able to understand and speak the Italian language. Patients were excluded if they had severe cognitive impairment, defined as a score of  $< 4$  on the Six-Item Screener,<sup>19</sup> or had a coronary event in the preceding 3 months. Informal caregivers were included if they were designated by the patient as the primary caregiver (defined as the person who provided most of the informal care to the patient), were

18 years or older, and able to understand and speak the Italian language. Participants (patient-caregiver dyads) were included in this analysis if they had complete data for both dyad members, resulting in a sample of 275 dyads for the present study.

### **Procedures**

Research assistants proposed the study to eligible dyad participants at each of the outpatient centers and explained the study aims and procedures. Signed informed consent was obtained prior to data collection. Survey data were collected separately from persons with HF and informal caregivers during face-to-face interviews conducted by trained research assistants and nurses. Clinical data (e.g., NYHA class, comorbid conditions) were extracted from the patients' medical records.

### **Measures**

***Dyadic Health.*** Quality of life for persons with HF and their informal caregivers was measured using the 12-item Short Form Health Survey (SF-12) version 2.<sup>20</sup> The SF-12 is a standardized generic measure that assesses eight domains of health-related QOL: physical functioning, physical role limitations, bodily pain, general health, vitality, social functioning, emotional role limitations, and mental health. Weighted scores are used to compute physical and mental component summary scores that range from 0 to 100, with higher scores reflecting better physical and mental QOL. Physical and mental component summary scores were computed using the QualityMetric Health Outcomes Scoring Software version 5.0 (QualityMetric Incorporated, USA). The SF-12 is a valid and reliable measure of physical and mental QOL that has been previously used across diverse samples<sup>20,21</sup> and culturally adapted and tested for use in Italy.<sup>22</sup> In the present study, we estimated the internal consistency reliability for physical and mental QOL using composite reliability.<sup>23</sup> Composite reliability coefficients for physical and mental QOL were 0.863 and 0.728 for persons with HF and 0.839 and 0.706 for informal caregivers, reflecting adequate reliability.

**Dyadic Appraisal.** Dyadic care type appraisal was assessed using the Dyadic Symptom Management Type (DSMT) instrument, a measure which first asks persons with HF and their informal caregivers to individually indicate how they routinely manage HF.<sup>24</sup> Participants were presented with response options that are in line with the following dyadic care types: Type I patient-oriented, where the patient takes full responsibility of HF management; Type II caregiver-oriented, where the caregiver takes full responsibility for that management; and Type III collaborative, where the patient and caregiver manage HF together. The DSMT instrument was initially developed for clinical use based on a qualitative typology of how patient and caregivers manage HF.<sup>24</sup> It has adequate face validity<sup>25</sup> and has been used in diverse samples of HF dyads.<sup>24</sup>

Using the response of each member of the dyad, we computed a raw dyad-level *congruence* variable to indicate whether the members of a dyad (person with HF and informal caregiver) had a congruent, shared appraisal of how they manage HF. If the two members of a dyad disagreed in their appraisal of who is responsible for HF management (i.e., selected different care types), the dyad was considered incongruent. The *congruence* variable was dichotomized to indicate whether dyad members were congruent or incongruent in their appraisal of HF dyadic management.

Satisfaction with dyadic care type appraisal was also assessed using the DSMT. After participants selected their care type, they were asked to rate their individual satisfaction with how the dyad manages HF using a 5-point Likert scale (1 = *extremely dissatisfied* to 5 = *extremely satisfied*). Persons with HF and informal caregivers rated this question separately.

**Contextual Factors.** Contextual factors were considered as covariates, given their established associations with QOL in the existing literature and in the present study. Covariates for persons with HF included age (in years) and HF severity assessed using the NYHA classification. Covariates for informal caregivers were age (in years) and daily time (in hours) with the person with HF, which included time spent assisting with physical and psychological needs (e.g., helping with activities of daily living,

providing emotional support, accompanying them to clinical appointments). Relationship type (spousal vs. non-spousal) was considered a dyad-level covariate.

### Data Analysis

Descriptive statistics (i.e., means, standard deviation, and frequencies) were used to characterize the sample. Paired sample *t*-tests and McNemar's tests were used to compare QOL, satisfaction, and demographic characteristics between persons with HF and informal caregivers. To determine the contextual factors that were included as covariates in multivariate analyses, bivariate correlations were used to assess associations between demographic and clinical characteristics and QOL outcomes.

To examine the influence of congruence in dyadic care type appraisal on QOL, two multilevel dyadic models were estimated (one for physical QOL and one for mental QOL) using the SAS Proc Mixed procedure in SAS version 9.4 (SAS Institute Inc., Cary, NC) to control for the interdependence in QOL within dyads.<sup>26</sup> We used the two-intercept (matched pairs) model for handling distinguishable dyad members<sup>26-28</sup> (persons with HF and informal caregivers). First, two redundant dummy variables were created to obtain separate effects of congruence on QOL for persons with HF and their informal caregiver. Those two dummy variables indicated whether QOL outcome scores were for persons with HF (i.e., persons with HF = 1, caregivers = 0) or caregivers (i.e., caregivers = 1 and persons with HF = 0). The two dummy variables allowed for the estimation of separate intercepts and variance components for persons with HF and caregivers.

Next, in the within-dyad model, the outcomes were the sum of latent true scores from persons with HF and caregivers plus a measurement error term, and were specified as:

$$Y_{ij} = \beta_{1P}(\text{Person with HF}_{ij}) + \beta_{2C}(\text{Caregiver}_{ij}) + \varepsilon_{ij}$$

where  $Y_{ij}$  represented the QOL (physical/mental) score  $i$  in dyad  $j$  ( $i = 1, \dots, m$ ),  $\beta_{1P}$  and  $\beta_{2C}$  were the estimated latent physical/mental QOL scores for persons with HF and caregivers, respectively, and

*Person with HF*<sub>ij</sub> and *Caregiver*<sub>ij</sub> are the indicator variables.  $\beta_{1P}$  and  $\beta_{2C}$  are the fixed effects and  $\varepsilon_{ij}$  is a random error or random effect within dyad. In the between-dyad model,  $\beta_{1P}$  and  $\beta_{2C}$  become dependent variables and represent average physical/mental QOL scores for persons with HF and caregivers, respectively. Predictors of QOL scores for persons with HF and their caregivers were included in the between-dyad model, as were covariates.

The models were adjusted for age (for persons with HF and informal caregivers), NYHA class (i.e., I/II vs. III/IV), daily hours with persons with HF, and relationship type (i.e., spousal vs. non-spousal). Finally, to examine the influence of satisfaction with dyadic care type appraisal on QOL, we added the *satisfaction* and *congruence* variables to both models to determine the contribution of satisfaction above and beyond whether members of a dyad are congruent on their perceptions of dyadic care type.

## Results

### Sample characteristics

A total of 275 dyads ( $N = 550$  individuals) participated in this study (Table 1). On average, informal caregivers were 25.2 years younger than persons with HF [50.2 vs. 75.4, respectively;  $t(274) = 21.581, p < 0.001$ ]. Approximately half of the persons with HF were male (54.9%), and most caregivers were female (70.5%). Caregivers were primarily children caring for a parent (46.5%), and two-thirds of them were employed (59.6%). Caregivers spent an average of 8 ( $\pm 8.24$ ) hours every day with the person with HF.

The majority of dyads (69.5%) were congruent in their appraisal of dyadic care type measured by the DSMT. Relationship type (spousal vs. non-spousal caregivers) was not associated with dyadic care type appraisal [ $\chi^2(3) = 2.36, p = .501$ ] or with congruence in dyadic care type appraisal [ $\chi^2(1) = 0.40, p = .528$ ]. Persons with HF reported significantly higher levels of satisfaction with dyadic care type, but lower levels of mental and physical QOL compared to their informal caregivers. There were no

significant differences in sociodemographic and clinical characteristics between congruent and incongruent dyads as reported in a previous study about congruence and patient self-care.<sup>15</sup>

### **Congruence in dyadic care type appraisal and quality of life**

Congruence in dyadic care type appraisal was not significantly associated with physical QOL in either persons with HF or informal caregiver (see Between-Dyad Model, Table 2). Age and NYHA class were significant predictors of physical QOL for persons with HF, while age and daily hours with the person with HF were significant predictors of physical QOL for informal caregivers. More specifically, increased age and NYHA class III/IV (compared to class I/II) were associated with worse physical QOL for persons with HF, while increased age and spending more time together were associated with worse physical QOL for informal caregivers.

Congruence in dyadic care type appraisal was differentially associated with mental QOL (see Table 2). There was no significant association between congruence and mental QOL for persons with HF ( $B = 2.35, p = .053$ ), while congruence was associated with significantly better mental QOL in informal caregivers ( $B = 2.69, p = .026$ ). Other significant predictors of mental QOL were also differentially associated with the mental QOL of the dyad, namely age, NYHA class, and daily hours with the person with HF. Specifically, increased age and having an NYHA class III/IV (compared to class I/II) were associated with worse mental QOL for persons with HF ( $B = -0.16, p = .003$  and  $B = -5.23, p < .001$ , respectively), while spending more time with the person with HF was associated with worse mental QOL for informal caregivers ( $B = -0.20, p = .022$ ).

### **Satisfaction with dyadic care type appraisal and quality of life**

Unlike congruence, satisfaction with how the dyad manages HF was associated with QOL outcomes for both persons with HF and informal caregivers, while controlling for age, NYHA class, daily hours spent together, relationship type, and congruence with dyadic care type (see Between-Dyad Model, Table 3). Higher levels of satisfaction with dyadic care type were associated with better physical

and mental QOL for persons with HF ( $B = 1.58, p = .011$  and  $B = 2.09, p = .002$ , respectively) and informal caregivers ( $B = 1.70, p = .004$  and  $B = 2.90, p < .001$ , respectively).

### Discussion

The purpose of this paper was to examine how congruent appraisals of dyadic care type and satisfaction with dyadic care type appraisal contribute to QOL for persons with HF and their informal caregivers. This is the first paper to our knowledge that links dyadic congruence and satisfaction regarding the dyad's appraisal of HF management with QOL of the care dyad. We found that *congruent appraisals* were only significantly associated with mental QOL in caregivers, whereas *satisfaction* was associated with both mental and physical QOL in both partners and was a stronger predictor of QOL, compared to congruent appraisal. This suggests that agreement on who is managing heart failure is less important than whether dyad members are satisfied with their arrangement when QOL is the focus. This is not the case when self-care is the focus. An earlier study found that congruent appraisals were only associated with better patient self-care symptom perception, while satisfaction was only associated with caregiver's self-care outcomes.<sup>15</sup> This study adds to a growing body of evidence regarding the dyadic/interpersonal context of illness management, particularly in HF management. Our findings have clinical implications for understanding reasons for incongruence and dissatisfaction with dyadic care type appraisals and assisting dyad members in reaching shared appraisals while managing HF. We also highlight areas for future research to better understand the implications of congruence and satisfaction with dyadic care type throughout an illness' trajectory.

Congruent appraisal of dyadic care type was significantly associated with mental QOL for informal caregivers. Our results are in line with prior theoretical work and empirical studies. The theory of dyadic illness management posits that having less incongruence between patient and caregiver in illness appraisal leads to more shared and collaborative illness management behaviors and better dyadic health.<sup>9</sup> Our findings support this assumption in that congruence in dyadic care appraisal (i.e.,

agreement or shared appraisal of on how each person contributes to HF management) was associated with dyadic QOL. Previous research also established the QOL benefits of congruence when appraising physical symptoms<sup>29</sup> or care values and preferences.<sup>30</sup> Our findings extend this prior work and emphasize that congruent appraisal of dyadic roles is also important for QOL, particularly for the caregiver. Congruent appraisals can lead to collaboration and joint decision-making and problem solving when managing HF and addressing challenges, which can have lasting effects on dyadic health.

We found that informal caregivers' mental QOL was more affected by incongruence compared to persons with HF, which might be explained by caregivers managing several competing demands and experiencing high levels of distress that may have been exacerbated by the incongruent appraisal of dyadic care type. It is also possible that incongruent appraisal is associated with deeper relational dysfunction, which can in turn influence caregivers' mental QOL. Additional research is needed to explore whether caregivers are more vulnerable to stressors such as those derived from incongruent appraisal of dyadic care type. It is also important to understand the reasons for incongruent appraisal in dyadic care type and how it can negatively influence QOL. We also did not find an association between congruence in dyadic care type appraisal and the physical dimension of QOL. It is possible that lack of agreement within the dyad on how each person appraises their contribution to HF management has a greater emotional toll on individuals, and is not as important to their physical QOL as it is to mental QOL.

Finally, the associations found in this study between satisfaction with dyadic care type appraisal and QOL for persons with HF and their caregivers are in line with the existing literature about general relationship satisfaction and physical and mental health outcomes.<sup>31</sup> The *satisfaction* variable in the current study is about participants' satisfaction with their appraisal of how each dyad member is contributing to HF management. While the existing research supports the benefits of congruent appraisal,<sup>29,30</sup> our findings suggest that satisfaction with dyadic care type appraisal is a stronger predictor of QOL than congruence. Satisfaction with dyadic care type indicates some level of

contentment or positive emotion about the situation, while congruent appraisal does not always imply a positive experience. For instance, a person with HF and their caregiver may agree in their appraisal of the caregiver being primarily responsible for HF management, however one or both dyad members may be unhappy about the situation, which would then influence their QOL. Therefore, someone's level of satisfaction with how care takes place (satisfaction) is more important than if they agree with their care partner on how care takes place (congruence), particularly in the context of HF management.

There are important clinical implications to note. Nurses and allied health professionals caring for persons with HF and their informal caregivers can facilitate conversations within dyads about how dyad members define working together and what their shared goals for engagement are to optimize satisfaction with dyadic management. Engaging in such frequent and open discussions will generate opportunities for exploring the perceptions of persons with HF and their informal caregivers about each other's roles and expectations, which would facilitate teamwork within the dyad.<sup>32</sup> This is particularly important given the life course dimensions of dyadic interaction in HF management.<sup>24</sup> Nurses can also guide the discussion to explore whether the current dyadic management approach is working for both members of the dyad and whether they are satisfied in order to build on their strength as a dyad. Therefore, nurses play a role in assisting persons with HF and their care partners to identify reasons for dissatisfaction and improve how they manage HF together, subsequently improving their QOL.

Our findings shed the light on several gaps in the literature that require further investigation. Future research is needed to better understand how dyadic care type changes throughout the trajectory of HF, and whether the change is associated with QOL. While it is known that patients' age and disease severity are determinants of dyadic care type,<sup>33</sup> it is unclear how congruent appraisal changes over time, as people get older and require additional assistance from their care partners. Similarly, it is important to examine how dyad members' satisfaction with dyadic care type evolves over time. There is preliminary evidence which suggests that certain dyadic types (i.e., Type III, Collaborative) are more

stable over time than other dyadic types, and similarly, that dyads which score higher on self-care are less likely to change types even as the patient's condition deteriorates, however, this needs further examination.<sup>24</sup> An equally important area that warrants further exploration is the understanding of factors that contribute to satisfaction with dyadic care types. Our call for future research will guide nurse scientists in determining the best intervention targets to improve appraisal of dyadic care type and promote dyadic illness management at different stages of an illness' trajectory.

This study has some limitations. First, we analyzed cross-sectional data, which limits our ability to infer causal relationships between congruence or satisfaction with dyadic care type appraisal and QOL. Additionally, as in any secondary analysis of data, we were limited to the variables available in the dataset. The established associations in the current study may be modified with the addition of other contextual factors, such as mutuality, which has been linked with dyadic care types and QOL outcomes.<sup>7,33</sup> Last, the parent study was conducted in Italy and participants' views on family closeness and family approaches to illness management may be different from those in other cultures. Therefore, the findings about dyadic care types and QOL outcomes might be generalizable with caution to other countries where individualistic perspectives are more predominant. Despite these limitations, the current study is among the first to highlight the significance of congruence and satisfaction with dyadic care type appraisal in the context of HF management.

### **Conclusion**

Congruence and satisfaction with dyadic care type appraisal contribute to better QOL outcomes for HF care dyads. Our findings suggest that it is not only important to "be on the same page" in terms of dyadic appraisal, but also to be satisfied with the dyadic care arrangement. Nurses and other health care professionals are recommended to assist persons with HF and their informal caregivers in reflecting on their roles towards HF management to enhance their teamwork skills. Last, future research is needed to

examine how congruence and satisfaction with dyadic care types change over time and influence the dynamic construct of QOL.

### **Novelty**

- Congruent appraisal of dyadic care type contributes to mental quality of life, specifically for caregivers of persons with heart failure.
- The level of satisfaction with dyadic care type is more important to quality of life than whether dyad members agree on dyadic care type.
- Identifying and addressing reasons for dissatisfaction with dyadic care type appraisal can improve quality of life for heart failure care dyads.

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### **Data Availability Statement**

The dataset analyzed during the current study is not publicly available, but is available from Dr. Ercole Vellone ([ercole.vellone@uniroma2.it](mailto:ercole.vellone@uniroma2.it)) on reasonable request.

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## Tables

**Table 1. Demographic and clinical characteristics of persons with heart failure and their informal caregivers (N = 275 dyads)**

Variable	Person with HF	Informal caregivers	<i>t</i> / $\chi^2$
	Mean $\pm$ SD or <i>n</i> (%)	Mean $\pm$ SD or <i>n</i> (%)	
<b>Age (in years)</b>	75.39 $\pm$ 10.83	50.21 $\pm$ 20.04	21.581**
<b>Gender</b>			26.159**
Male	151 (54.9)	81 (29.5)	
Female	124 (45.1)	194 (70.5)	
<b>Marital status</b>			8.782*
Married/Cohabiting	152 (55.3)	186 (67.6)	
Not Married	123 (44.7)	89 (32.4)	
<b>Educational level (in years)</b>			91.207**
0-8 years	202 (73.5)	88 (32)	
> 9 years	73 (26.5)	187 (68)	
<b>Employment status</b>			108.058**
Unemployed/retired	241 (87.6)	111 (40.4)	
Employed	34 (12.4)	164 (59.6)	
<b>NYHA class</b>			
Class I	64 (23.3)		
Class II	105 (38.2)		
Class III	90 (32.7)		
Class IV	16 (5.8)		
<b>Months since HF diagnosis</b>	51.87 $\pm$ 50.51		
<b>Charlson Comorbidity Index</b>	3.37 $\pm$ 1.90		
<b>Relationship to person with HF</b>			
Child		128 (46.5)	
Spouse		78 (28.4)	
Other		69 (25.1)	
<b>Co-residence</b>			
No		152 (55.3)	
Yes		123 (44.7)	
<b>Caregiving hours per day</b>		8 $\pm$ 8.24	
<b>Dyadic care type</b>			
Congruent, patient-oriented	35 (12.7)		
Congruent, caregiver-oriented	18 (6.5)		
Congruent, collaborative	138 (50.2)		
Incongruent	84 (30.5)		
<b>Satisfaction with dyadic care type</b>	4.12 $\pm$ 0.83	3.83 $\pm$ 0.88	4.818**
<b>Physical QOL</b>	37.11 $\pm$ 9.32	48.99 $\pm$ 9.03	-16.422**
<b>Mental QOL</b>	45.48 $\pm$ 9.78	51.30 $\pm$ 9.66	-8.365**

*Note.* NYHA class: New York Heart Association class; HF: heart failure; QOL: quality of life. Physical and mental QOL were assessed using the SF-12. Paired t-test and McNemar's test were conducted to compare the responses of persons with HF and informal caregivers.

\* $p < .01$ , \*\* $p < .001$

**Table 2. Congruence in dyadic care type and quality of life for persons with heart failure and their informal caregivers (N = 275 dyads)**

Fixed effect	Physical QOL		Mental QOL	
	<i>B (SE)</i>	<i>p</i>	<i>B (SE)</i>	<i>p</i>
<b>Person with HF</b>				
<i>Congruence in dyadic type</i>	0.89 (1.09)	0.416	2.35 (1.21)	0.053
<i>Age</i>	-0.16 (0.05)	0.001	-0.16 (0.05)	0.003
<i>NYHA class</i>	-7.34 (1.03)	<0.001	-5.23 (1.11)	<0.001
<i>Relationship type</i>	0.96 (1.17)	0.413	-0.83 (1.30)	0.521
<b>Informal caregiver</b>				
<i>Congruence in dyadic type</i>	1.26 (1.12)	0.263	2.69 (1.21)	0.026
<i>Age</i>	-0.09 (0.04)	0.041	-0.07 (0.05)	0.153
<i>Daily hours with person with HF</i>	-0.26 (0.08)	0.002	-0.20 (0.08)	0.022
<i>Relationship type</i>	0.20 (1.66)	0.906	-1.35 (1.76)	0.446

*Note.* HF: heart failure; QOL: quality of life; NYHA class: New York Heart Association class; *B*: unstandardized estimate; SE: standard error. Physical and mental QOL correspond to the physical (PCS) and mental (MCS) component summary scores of the SF-12.

**Table 3. Satisfaction with dyadic care type and quality of life for persons with heart failure and their informal caregivers (N = 275 dyads)**

Fixed effect	Physical QOL		Mental QOL	
	<i>B (SE)</i>	<i>p</i>	<i>B (SE)</i>	<i>p</i>
<b>Person with HF</b>				
<i>Satisfaction with dyadic type</i>	1.58 (0.61)	0.011	2.09 (0.66)	0.002
<i>Congruence in dyadic type</i>	0.44 (1.09)	0.690	1.75 (1.20)	0.146
<i>Age</i>	-0.16 (0.05)	0.001	-0.16 (0.05)	0.003
<i>NYHA class</i>	-7.44 (1.03)	<0.001	-5.32 (1.10)	<0.001
<i>Relationship type</i>	0.59 (1.17)	0.616	-1.34 (1.29)	0.298
<b>Informal caregiver</b>				
<i>Satisfaction with dyadic type</i>	1.70 (0.58)	0.004	2.90 (0.59)	<.001
<i>Congruence in dyadic type</i>	0.90 (1.11)	0.417	2.09 (1.16)	0.073
<i>Age</i>	-0.08 (0.04)	0.054	-0.06 (0.04)	0.197
<i>Daily hours with person with HF</i>	-0.29 (0.08)	0.001	-0.23 (0.08)	0.005
<i>Relationship type</i>	0.20 (1.64)	0.903	-1.40 (1.69)	0.412

*Note.* HF: heart failure; QOL: quality of life; NYHA class: New York Heart Association class; *B*: unstandardized estimate; SE: standard error. Physical and mental QOL correspond to the physical (PCS) and mental (MCS) component summary scores of the SF-12.