

When Is Helping your Partner with Chronic Pain a Burden?

The Relation between Helping Motivation and Personal and Relational Functioning

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Abstract

Objective: Self-Determination Theory (SDT) may be a useful framework to understand why chronic pain affects partners. SDT postulates that individuals can engage in helping behaviors for different motives varying from more autonomous or volitional motives to more controlled or pressured motives. This article examines the relationship between partners' type of motivation to help (i.e., autonomous vs. controlled) and their personal and relational functioning. Furthermore, mechanisms underlying this relationship (i.e., helping exhaustion and relationship-based need satisfaction) were also examined.

Methods: In a sample of 48 couples, of which one partner had chronic pain (36 female patients), questionnaires measuring life satisfaction, positive and negative affect, anxiety and depressive feelings, relationship quality and relationship-based need satisfaction were filled out. Individuals with chronic pain (ICPs) also reported on pain intensity and disability whereas partners were requested to also report on motives for helping and helping exhaustion.

Results: Data analysis with Structural Equation Modeling revealed that autonomous, relative to controlled, motives for helping among partners related positively to partners' well-being and relationship quality, and negatively to distress. The experience of helping exhaustion and relationship-based need satisfaction mediated these associations. Moreover, partners' autonomous helping motivation related positively to patient-reported relationship quality among ICPs high in pain intensity.

Conclusions: Applying Self-Determination Theory in a context of pain provides new insights into why chronic pain affects partners and how partners impact patient outcome. Directions for future research are outlined.

1. Introduction

Pain is known to elicit suffering among individuals with chronic pain (ICPs). However, also partners of ICPs may report elevated distress [1], relational dissatisfaction [2] and caregiver exhaustion [3]. Yet, it is unclear why some partners experience these challenges and others do not. As partners may be a primary source of social support for ICPs who struggle daily with pain, it may be relevant to consider *why* partners provide help [3]. Within the present study, Self-Determination Theory (SDT) [4] is adopted to examine the relation between partners' type of helping motivation and both ICPs' and partners' personal and relational functioning.

SDT is a broad theoretical framework for the study of human motivation and personality. Within this theory, different types of motivation can be located on a continuum ranging from highly controlling to highly autonomous [4]. The distinction between *autonomous* and *controlled* motivation is also relevant in the context of helping behavior [5]. When partners help out of enjoyment and inherent satisfaction associated with the helping or because they perceive the helping to be personally important, they are said to act for *autonomous* or volitional reasons. In contrast, *controlled* motivation refers to pressure to help, which can originate either from the outside, such as the avoidance of the ICP's criticism or the necessity to meet the ICP's demanding expectations, or from the inside, such as the avoidance of guilt feelings or the internal obligation to be loyal vis-à-vis the ICP. Abundant research in a variety of life domains has found autonomous motivation to yield manifold benefits, including greater activity engagement, better maintained behavioral persistence, enhanced well-being and better relational functioning [6,7].

These benefits presumably occur because autonomous and controlled motivation differentially contribute to the satisfaction of three universal psychological needs, which must be satisfied for effective human functioning [4]. These basic psychological needs are the following: (a) the need for competence (referring to feeling effective in carrying out activities), (b) the need

for autonomy (denoting experience of choice and psychological freedom), and (c) the need for relatedness (referring to the experience of intimacy and warmth). Need satisfaction does not only account for personal well-being benefits associated with autonomous functioning (e.g.,[8]) but may also contribute to better relationship quality [9]. Autonomous motivation to help may further yield well-being benefits for partners because it may buffer against emotional exhaustion [10,11].

A few studies have already investigated the motivation underlying helping behavior from an SDT-perspective. Ryan and Connell [12] showed that more autonomous motives underlying elementary school children's prosocial behavior related to greater empathy and greater relatedness with parents and teachers. Subsequent work among adult volunteers showed more autonomous motives for volunteering to relate to greater volunteering satisfaction, lower intention to quit volunteer work [13] and greater effort-expenditure [14]. On a clinical level, autonomous motives for giving care to one's spouse with cancer have been found to predict less depressive symptoms and more experienced benefits after care provision among the caregiving spouses [15]. Furthermore, the well-being benefits of autonomous motives for prosocial behavior (in healthy participants) have been found to radiate towards the recipients of help, who also experienced greater relatedness need satisfaction [5].

In the present study in partners of ICPs, we hypothesized that (1) partners' autonomous, relative to their controlled, helping motivation would be associated with higher levels of personal well-being and relationship quality, while being negatively related to their psychological distress. (2) Second, we expected partners' reduced helping exhaustion and higher relationship-based need satisfaction to account for these effects. Furthermore, we expected (3) autonomous, relative to controlled, helping motivation to be associated with the ICPs' experienced disability, personal well-being, psychological distress and relationship quality, in particular among those in high need for help to deal with the pain, i.e. those high in

pain intensity and (4) that these effects can be explained by a higher relatedness need satisfaction in ICPs, as helping for autonomous reasons may promote closeness [5,16].

2. Methods

2.1 Participants

Participants were 48 couples, recruited through the Flemish Pain League, an umbrella organization for individuals suffering from chronic pain. In December 2010, members of the Flemish Pain League (about 3000) received an invitation letter to participate in studies about chronic pain and quality of life in our lab (see figure 1). About 10% ($N = 315$) agreed to be contacted by phone. Of those, 244 ICPs were contacted, 189 were reached by phone and 110 met the inclusion criteria. Eighty-seven couples (79.1%) agreed to participate. Inclusion criteria for participation of ICPs in the present study were (1) having chronic pain for at least 3 months, (2) living together with a partner for at least one year, (3) being between 18 and 65 years, and (4) being sufficiently proficient in Dutch. The predominant reasons for non-participation ($N = 23$) were no interest in the study, personal problems, or lack of time. Of the 87 couples who agreed, 62 ICPs and 51 partners fully completed the questionnaires, resulting in complete data for 48 dyads. Questionnaire data were incomplete for 28 couples (35.9%) and missing for 11 couples (12.6%).

- Insert Figure 1 about here -

In our final sample ($N = 48$ dyads), ICPs were predominantly female ($N = 36$ female ICPs). The mean age of ICPs was 53.0 years ($SD = 7.6$; range: 25-64 years) and for partners it was 53.9 years ($SD = 7.0$; range: 31-67 years). All couples were Caucasian and most of them were heterosexual ($N = 46$). The majority was married or legally cohabiting (85.4%), for which the mean duration of the relationship status was 24.6 years ($SD = 11.4$; range: 0.2-43.0 years). Except for one partner with a Dutch nationality, all ICPs and partners were Belgian. Most ICPs were living off a disability allowance (62.5%). Almost half of them had followed higher

education beyond the age of 18 (45.8%). More than half of the partners were working (60.4%) and 41.7% had followed higher education. No socio-demographic information was available for non-responders to the invitation letter. The most commonly reported pain condition in ICPs was fibromyalgia¹ ($N = 17$, 35.41%), followed by neuropathic pain ($N = 14$, 29.17%) with mainly sciatic complaints, and nociceptive musculoskeletal pain ($N = 13$, 27.08%), which included osteoarthritis, spinal fracture, trauma, congenital disorder and inflammatory disease. Some ICPs reported having failed back surgery syndrome ($N = 8$, 16.67%). Participants were allowed to report multiple conditions, which made the sum of all the conditions greater than 100%. Three ICPs did not provide any information regarding their diagnosis.

2.2 Questionnaires

ICP's pain intensity and disability were assessed with the Graded Chronic Pain Scale (GCPS) [17]. A pain intensity score was calculated by averaging three ratings for pain intensity (current pain, average pain, and worst pain in the past six months) each on a scale from '0' (no pain) to '10' (worst imaginable pain). A disability score was computed by calculating the mean score out of three items about pain interference with activities during the last six months (daily activities; recreational, social and family activities; work or household activities), which were also rated on a scale from '0' (no interference) to '10' (impossible to carry out activity). The GCPS has shown to be a reliable and valid measure of severity of chronic pain [18]. In the present study, Cronbach's alphas were .66 for pain intensity and .89 for disability. The Satisfaction With Life Scale (SWLS) [19] was used to assess general life satisfaction in both partners. This scale consists of 5 items (e.g., "In most ways my life is close to my ideal") that are rated using a 7-point scale ranging from '1' (not at all) to '7' (extremely). The SWLS is widely used and validated. Cronbach's alphas in the present study were .82 and .91 for ICPs and partners, respectively.

¹ Some consider fibromyalgia as neuropathic pain [53]

The Positive and Negative Affect Schedule (PANAS) [20] measured positive (10 items; e.g., enthusiastic) and negative affect (10 items; e.g., upset) in both partners. Each of the 20 items was rated on a 5-point scale ranging from '1' (very slightly) to '5' (extremely) to indicate the extent to which the affect is experienced in general. Cronbach's alphas in the current study were .91 and .93 for positive affect and .91 and .90 for negative affect for ICPs and partners respectively.

Psychological distress was measured in both partners by using the Hospital Anxiety and Depression Scale (HADS) [21] and consists of 14 items, seven of which screen for anxiety symptoms (e.g., "Do you worry a lot?") and seven for depressive symptoms (e.g., "Do you feel optimistic about the future?"). Items are rated on a 4-point scale representing the degree of distress experienced during the previous week. The HADS has proven to be reliable and valid as a screening instrument in adults with or without a medical condition [19]. A higher total score indicates more general distress [22]. In the present study, Cronbach's alphas were .90 and .94 for total scores of ICPs and partners, respectively.

Relationship quality was assessed with the 32-item Dyadic Adjustment Scale (DAS) [23], which provides a global measure of relational adjustment. The DAS consists of four subscales. Dyadic satisfaction (10 items) measures the tension between partners and the extent to which ending the relationship has been considered. The extent of agreement between partners is called dyadic consensus (13 items). Dyadic cohesion (5 items) assesses shared interests and activities, and affectional expression (4 items) reflects the satisfaction with affection and sex in the relationship. Higher sum scores represent higher levels of relationship quality. Heene et al.[24] confirmed reliability and validity of the overall scale. In this study, Cronbach's alphas were .94 for ICPs and .93 for partners.

To measure partners' helping motivation, we used an adapted version of the Motivation to Help Scale (MHS) [5]. Partners received a list of 20 reasons (instead of an original set of 11

items) for helping or supporting their partner in pain. They reported on how true these motives for helping were for them on a 7-point scale ranging from '1' (not at all true) to '7' (totally true). Drawing from SDT, four different types of motivation were distinguished: external motivation (5 items, e.g., "because my partner would criticize me"), introjected motivation (5 items, e.g., "because I would feel guilty if I didn't help"), identified motivation (5 items, e.g., "because I think it is important to help my partner") and intrinsic motivation (5 items, e.g., "because I enjoy helping my partner"). Items of external and introjected motivation were summed up to represent controlled motivation to help, whereas items of identified and intrinsic motivation were summed to represent autonomous motivation to help. Cronbach's alpha was .75 for controlled motivation and .89 for autonomous motivation. In line with Weinstein and Ryan [5], an overall index reflecting the *relative* degree of autonomous helping motivation was calculated by subtracting controlled motivation from autonomous motivation scores. A variety of studies have shown that the observed effects of an overall measure can be carried by the effects underlying both autonomous and controlled functioning (e.g.[25]).

Helping exhaustion in partners was assessed by means of an adapted version of the exhaustion subscale of the Maslach Burnout Inventory General Survey by applying the items to a help context [26]. Three components have been distinguished in job burnout: exhaustion, cynicism and reduced efficacy, of which the first one is the most obvious manifestation of burnout [27]. Partners were requested to rate on a 7-point scale the extent to which they agreed with five items (e.g., "In the evening, I often feel exhausted by the efforts to help my partner"). Higher scores reflect higher levels of exhaustion. Cronbach's alpha was .86.

Need satisfaction within a relational context was measured in both partners by an adapted version of the Need Satisfaction Scale [28]. Compared with the original scale, which consists of 9 items, three additional reverse scored items were added in our version to attain a balanced

measure of need satisfaction and frustration. This scale measures the degree to which partners feel supported by their partner in the fulfillment of their basic psychological needs. Similar to the original version, three subscales can be distinguished: autonomy satisfaction (e.g., “When I am with my partner, I feel free to be who I am”), competence satisfaction (e.g., “When I am with my partner, I feel competent”) and relatedness satisfaction (e.g., “When I am with my partner, I feel loved”). A total of 12 items (4 items for each of the three needs) were rated on a 7-point scale from ‘0’ (totally disagree) to ‘7’ (totally agree). Cronbach’s alpha was .58 and .65 for autonomy, .74 and .71 for competence, .77 and .71 for relatedness for ICPs and partners, respectively. An overall score was created by averaging the three separate need scales, which yielded an alpha of .88 for both ICPs and partners.

2.3 Procedure

Members of the Flemish Pain League were contacted by telephone upon agreement to (1) provide more information about this study and (2) assess inclusion criteria. If both partners in a couple reported having chronic pain ($N = 14$)², the individual with the longest pain duration was chosen as the ICP. Only if both partners were willing to participate, an email was sent to them with the link to the online questionnaires and a personalized code to log in. Eight of the 48 couples had no access to the internet or were not able to work with it. Paper and pencil questionnaires for those couples were sent by regular mail with a pre-paid envelope enclosed. This study was approved by the ethical committee of the Faculty of Psychology and Educational Sciences of Ghent University.

² Preliminary analyses showed that there were significant differences between pain characteristics of ICPs and partners who also reported having chronic pain. Considering the small sample of dyads ($N=14$) the Wilcoxon Rank Sum test for paired samples was used. ICPs, when compared to their partners, reported a higher pain duration in months ($M_{ICP} = 160.9$, $SD = 89.8$ versus $M_{partner} = 97.8$, $SD = 125.8$; $W = 74$, $p = .05$), more disability ($M_{ICP} = 7.30$, $SD = 1.51$ versus $M_{partner} = 2.7$, $SD = 2.16$; $W=102$, $p<0.01$) and more pain intensity ($M_{ICP} = 7.2$, $SD = 1.1$ versus $M_{partner} = 4.5$, $SD = 1.6$; $W = 100$, $p<0.01$). Next, an independent samples t-test showed that there was no difference in relative autonomous helping motivation of partners with, compared to those without, chronic pain ($t(46) = -.79$, $p=.43$). Based on these analyses, we decided to not further control for the presence of chronic pain in partners.

2.4 Data analytic strategy

Structural Equation Modeling (SEM) was conducted in R (version 3.0.1) with the *lavaan* package [29]. SEM is one of the most commonly used data-analytic techniques for dyadic data [30]. For each of the hypotheses a SEM model was created³. To evaluate model fit, the χ^2 -test statistic, the comparative fit index (CFI), root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR) were used. A model was considered good when the χ^2 -test was not significant, when CFI values were greater than .95, when RMSEA values were close to .06 and when SRMR values were around .08 or below [31,32]. For comparing two nested models we used the χ^2 difference test. To compute this test, the difference of the two χ^2 values of the models in question is calculated as well as the difference in the degrees of freedom. When the test is significant, it means that the model with a new parameter (i.e. the largest model with most freely estimated parameters) fits the data better than the smaller and previously estimated model. When the test is not significant, both models fit equally well, which means that the extra parameter in question can be eliminated from the model and the more parsimonious model is to be preferred. In all models with partner outcomes, age and gender of the partner were entered as control variables. For models with ICP outcomes we entered age and gender of the ICP. Helping motivation and pain intensity were centered and an interaction term was created and added in order to examine moderation effects. Robustness of results against violations of the multivariate normality assumption was assessed using the Satorra-Bentler correction. In each model, standardized path coefficients were reported. Personal well-being was used as a latent variable with life

³ Two-hundred observations or a ratio of sample size to the number of free parameters equal to 5 are often seen as a goal for SEM research, however, these rules-of-thumbs are outdated. Sample size requirements have to be model-specific by taking into account the number of indicators and factors, the magnitude of factor loadings and path coefficients, and the amount of missing data [54]. Also, the performance of SEM heavily depends on the complexity of the proposed model [55]. To evaluate the performance of the fit indices and the stability of the estimated effects in our setting, we mimicked through simulations the data structure observed in this study and repeatedly draw samples of size 48 from the observed multivariate normal distribution. This simulation study revealed appropriate performance of the SEM-approach in this setting. For evaluating a test of fit, it is recommended to use at least two different classes of goodness-of-fit statistics [31].

satisfaction and positive and negative affect as indicators, since there is a general agreement that for measuring personal well-being both life evaluations and measures of affect need to be included. We did not use psychological distress as a fourth indicator of personal well-being, but included it as a separate outcome measure, for which we used the total score of the HADS. Separate from personal well-being, relationship quality was added as a final outcome variable by using the total score of the DAS. When mediation coefficients were tested, bootstrapped standard error estimates, using 1000 draws, were computed [33].

3. Results

3.1 Descriptive statistics

In this sample ICPs reported on average 160.94 months of pain ($SD = 89.81$). The mean pain intensity score on a Likert scale ranging from 0 to 10 was 7.30 ($SD = 1.51$) and the average disability in ICPs was 7.23 ($SD = 1.09$). Paired samples t -tests were conducted to examine whether outcome variables and relationship-based need satisfaction were significantly different between the two partners. ICPs only reported less life satisfaction ($M_{ICP} = 10.40$, $SD = 6.57$; $M_{partner} = 17.67$, $SD = 7.12$; $t(49) = -6.63$, $p < .001$) and less positive affect ($M_{ICP} = 10.40$, $SD = 6.57$; $M_{partner} = 17.67$, $SD = 7.12$; $t(49) = -2.79$, $p < .01$) than their partners. For negative affect, ICPs ($M = 21.73$, $SD = 8.17$) did not differ from their partners ($M = 19.35$, $SD = 7.70$). Also for anxiety symptoms ($M = 8.21$, $SD = 4.52$; $M = 7.33$, $SD = 4.45$) and depression symptoms ($M = 7.60$, $SD = 4.49$; $M = 6.13$, $SD = 4.56$) mean scores were not significantly different between ICPs and partners. For relationship quality (DAS) [20] total scores less than 100 are commonly used as a cut point for poor relationship quality. As for ICPs ($M = 115.01$, $SD = 19.15$), 10 had a score below 100, while 11 partners had a score below 100 ($M = 112.30$, $SD = 17.89$). Also for this outcome measure, mean scores were not significantly different between ICPs and partners, as for overall relationship-based need satisfaction and autonomy, competence and relatedness need satisfaction ($p > .05$).

3.2 Correlations

Table 1 provides within-couple correlations along the diagonal as well as correlations between all measured variables for ICPs (below the diagonal) and for partners (above the diagonal). In line with our expectations, partners' relative autonomous helping motivation was significantly and positively related to partners' well-being, relationship quality, and relationship-based need satisfaction, while being negatively related to partners' distress and helping exhaustion. Also, overall relationship-based need satisfaction in partners was positively associated with their personal well-being, relationship quality, and negatively associated with psychological distress. With regard to partners' helping exhaustion, significantly negative correlations were found with personal well-being and relationship quality and positive correlations with psychological distress. Partners' relative autonomous helping motivation was, however, not related to any of the measures reported by the ICP, except for a positive association with ICPs' relatedness need satisfaction. ICPs' relatedness satisfaction was also significantly negatively related to negative affect and psychological distress, while being positively related to relationship quality in ICPs.

Within-couple correlations revealed significant associations between both partners' life satisfaction, psychological distress and relationship quality, as well as between their level of overall need satisfaction and the three separate need measures. Only positive and negative affect were not significantly correlated within the couple.

3.3 Measurement model

Before testing a structural model, an initial test of the measurement model was conducted for partners and ICPs simultaneously. We used a confirmatory factor analysis to examine whether the three indicators for personal well-being (life satisfaction, positive and negative affect) provided a good fit. Results showed an acceptable fit ($\chi^2(8) = 10.86$, $p = .21$, CFI = .97, RMSEA = .08 and SRMR = .08). The first factor loading (life satisfaction) was fixed to 1, the

loadings of positive and negative affect on personal well-being as latent variable were statistically significant for both partner and ICP variables ($p < 0.01$).

3.4 Hypothesis 1: Helping motivation and partner outcomes

To determine whether partners' helping motivation was a significant predictor of partners' personal well-being, distress, and relationship quality, a SEM model was tested. The model fit was good: $\chi^2(10) = 9.82$, $p = .46$, CFI = 1.00, RMSEA = .00 and SRMR = .04. Results indicated that there was a positive contribution of relative autonomous helping motivation to personal well-being ($\beta = .50$, $SE = .06$, $p < .01$) and relationship quality ($\beta = .45$, $SE = .19$, $p < .01$), while being negatively related to psychological distress ($\beta = -.45$, $SE = .09$, $p < .01$). No main effects were found for partners' age and gender.

3.5 Hypothesis 2: Helping exhaustion and relationship-based need satisfaction as mediators

A second SEM model was constructed to test whether partners' helping exhaustion would function as a mediator of the relationship between relative autonomous helping motivation and partner outcomes. The mediation model provided a good fit to the data: $\chi^2(17) = 16.60$, $p = .48$, CFI = 1.00, RMSEA = .00, SRMR = .06. Greater relative autonomous helping motivation in partners was associated with less helping exhaustion ($\beta = -.68$, $SE = .06$, $p < .001$). In turn, helping exhaustion was negatively associated with partners' well-being ($\beta = -.71$, $SE = .11$, $p < .001$), relationship quality ($\beta = -.44$, $SE = .39$, $p < .01$) and positively associated with psychological distress ($\beta = .64$, $SE = .18$, $p < .001$). Next, the same model was tested, this time allowing a direct path between relative autonomous helping motivation and outcomes. This model also provided a good fit ($\chi^2(14) = 14.99$, $p = .38$, CFI = .99, RMSEA = .04, SRMR = .06). The χ^2 difference test, used for comparing two nested models, indicated that this direct effect model was not significantly better than the previous one ($\chi^2_{\text{diff}}(3) = 1.88$, $p = .60$). Furthermore, helping motivation was no longer associated with the three different

partner outcomes ($p > 0.05$), which means that helping exhaustion completely mediated the relationship between relative autonomous helping motivation and the three outcome variables in partners.

Finally, we examined whether partners' overall relationship-based need satisfaction may also serve as a mediator in the relationship between relative autonomous helping motivation and partner outcomes, thereby simultaneously introducing both potential mediators in the model. The mediation model, which is graphically depicted in Figure 2, provided an acceptable fit to the data: $\chi^2(21) = 24.42$, $p = .27$, CFI = .98, RMSEA = .06, SRMR = .08. Next, three direct paths from helping motivation to the outcome variables were added. Similar to the previous analyses, results showed that helping motivation was no longer associated with the three different partner outcomes ($p > 0.05$) and that this model did not yield a superior fit ($\chi^2_{\text{diff}}(3) = 1.18$, $p = .76$). Hence, the main effects were again removed from the model. Results of these analyses suggest that relationship-based need satisfaction and helping exhaustion completely mediated the relationship between relative autonomous helping motivation and the three outcome variables. As for helping exhaustion, two of the three indirect effects (reflecting the degree of mediation) were found significant, that is, personal well-being $a_2b_{21} = .36$ ($p < .01$) and psychological distress $a_2b_{22} = -.33$ ($p < .05$). Helping exhaustion did not emerge as a significant mediator of relationship quality $a_2b_{23} = .06$ ($p > .05$). As for relationship-based need satisfaction, all three indirect effects to all three outcomes were found significant. Specifically, for personal well-being the indirect effect of helping motivation was $a_1b_{11} = .22$ ($p < .05$), for psychological distress it was $a_1b_{12} = -.19$ ($p < .05$) and for relationship quality it was $a_1b_{13} = .43$ ($p < .01$). These indirect effects reflect the effects of helping motivation through helping exhaustion and relationship-based need satisfaction on the three different outcome variables. These arrows and numbers are not drawn in Figure 2 to maintain the

clarity of the figure. In all described models, main effects for partners' age and gender were never significant.

- Insert Figure 2 about here -

3.6 Hypotheses 3 & 4: Helping motivation and ICP outcomes

To determine whether helping motivation would be associated with ICP outcomes, we tested a SEM model with the different ICP outcome variables (i.e., disability, personal well-being, psychological distress, and relationship quality). Because pain intensity is an important variable to take into account when explaining well-being in ICPs (e.g., [34,35]), we tested for moderation effects of pain intensity. In this SEM model fit indices were acceptable ($\chi^2_{(16)} = 20.62$, $p = .19$, CFI = .96, RMSEA = .08, SRMR = .05), but no main effects were found between partners' relative autonomous helping motivation and the different ICP outcomes. Also no main effects were found for age and gender of ICPs. Interestingly, there was a significant helping motivation by pain intensity interaction term explaining ICP reported relationship quality ($\beta = .28$, SE = .01, $p = .05$). Figure 3 provides simple regression lines of ICPs' relationship quality as a function of partners' helping motivation at high (+1SD) and low levels (-1SD) of ICPs' reported pain intensity. In this figure, a positive trend is suggested indicating that greater autonomous helping motivation in partners is related to higher ICP-reported relationship quality in ICPs reporting high intensity pain, which differs from the trend observed in ICPs reporting low intensity pain. As there were no direct effects of helping motivation upon ICP outcomes in this SEM model, no mediation models were further tested (hypothesis 4).

- Insert Figure 3 about here -

4. Discussion

We aimed at investigating whether a motivational perspective on helping, as provided by Self-Determination Theory (SDT) [4], is useful in explaining the variation in personal and

relational well-being and distress in partners of individuals with chronic pain's (ICPs). Furthermore, it was examined whether partners' type of helping motivation also relates to ICP outcomes.

As expected, we found that partners who helped ICPs out of autonomous relative to controlled reasons reported higher levels of individual well-being and relationship quality, and lower levels of distress. This is in line with previous findings reported by Weinstein and Ryan [5], who found autonomous motivation to help strangers yielding similar well-being benefits for the helper. The current findings indicated that also in a context of chronic pain, autonomously motivated helping contributes to the helper's well-being. These findings equally suggest that although controlled motivated partners might provide help to their partners (ICPs), they may derive less, if any, personal and relational well-being benefits from it, and in fact, they may even experience elevated distress.

We also aimed at examining the mechanisms underlying the association between relative autonomous helping motivation and partner outcomes. Two likely mediators were put forward: helping exhaustion and relationship-based need satisfaction. As exhaustion has received numerous attention within work and organizational literature [27], we reasoned helpers of ICPs may also feel exhausted. Much like emotionally exhausted workers report more stress-related health outcomes [27], partners of ICPs may also experience helping their partner as being mentally and physically exhausting, thereby feeling distressed. Past work found emotional exhaustion to be more salient among controlled motivated teachers [11,36]. Also, greater controlled motivation to care for older people was predictive for higher caregiver stress [10]. In line with these findings, we found that higher relative autonomous helping motivation was related to less helping exhaustion. It seems then that partners who experience the helping as a daunting duty, that is, as an obligatory task they cannot avoid, are

more at risk for experiencing the helping as energy depleting than those with an autonomous helping motivation.

Results further suggest that to the extent helping is exhausting, there are personal and relational costs associated with it. These findings are consistent with previous research, in which caregiving burden among spouses of patients with lung cancer was related to 3- and 6-month follow-up distress in spouses [37]. Similarly, elderly spouses of patients with longstanding Parkinson's disease experienced elevated distress and reduced quality of life related to caregiving [38].

Interestingly, helping exhaustion especially appears critical to account for the personal well-being costs associated with controlled helping motivation. When considered in conjunction with relationship-based need satisfaction it no longer related to partners' perceptions of relationship quality, presumably because its contribution was cancelled out when controlling for variation in relationship-based need satisfaction. Specifically, higher levels of partners' relationship-based need satisfaction were related to a better personal well-being and relationship quality, while negative associations with distress were found. The present findings are consistent with previous studies showing that autonomous helping is positively associated with basic psychological need satisfaction [5,39]. Presumably, partners who autonomously provide help may be more open for different strategies to provide effective help, thereby building a sense of effectiveness in responding to the patient's request for help (i.e. competence satisfaction). Further, autonomously engaged partners may be more available to help and be better attuned to empathically handle the patient's request for help, thereby more deeply connecting with the patient (i.e. relatedness satisfaction). Also, autonomous helpers may experience a greater sense of truly self-initiation and volition in helping (i.e. autonomy satisfaction). It appears that overall need satisfaction is an essential ingredient for

partner's personal and relational functioning, while also protecting them against personal ill-being [9].

Of particular interest was our research question whether partners' autonomous helping motivation would also relate to ICP outcomes. Although the findings indicated no direct relationship between partners' helping motivation and ICPs' well-being or distress, we found ICPs suffering from high pain intensity to benefit from autonomously motivated partners. Logically, partner's motives to provide help may only pay off if ICPs really are in need of help. In fact, among ICPs with low pain intensity, helping – regardless of the motive - may come across as meddlesome or reflect a lack of confidence and patience. On certain moments partners may do well to refrain from providing help to optimally nurture ICPs psychological needs.

It is possible that partners' helping motivation may affect the type (e.g., instrumental or emotional) of help provided. In this context, research has found solicitous partner responses (i.e., exhibiting concern, offering assistance, discouraging activity) to be related to more pain behavior [40,41], less activity [42], more disability and physical dysfunction ([43–45], higher tendencies to seek help [46] and greater usage of opioids [47] in ICPs, whereas encouragement of ICP well behaviors (i.e. engagement in healthy activities) has been associated with lower levels of ICP pain behavior [45]. These results show that different partner responses differentially relate to the pain experience and pain coping of ICPs and they may be dependent upon the present helping motivation. Also other variables, such as the feeling of warmth and connectedness in ICPs, may be affected by partners' type of helping motivation. As the present study shows, relatedness satisfaction in ICPs was significantly correlated with partners' autonomous helping motivation. Helping is an interpersonal act, which has the potential to enable the promotion of intimacy and enhance satisfaction within the couple; however, in this study there was no main effect of partners' helping motivation on

the relationship quality perceived by ICPs. It is possible that helping may also be a source of conflict and disagreement within the relationship, especially when the support is unskillfully provided [48].

Although correlational in nature, the present study has some clinical relevance. Several studies already demonstrated the benefits of partner involvement in pain treatment (e.g. [48,49]). The present study indicates that the reason for partners to be involved in pain treatment is of critical importance. That is, although some partners might be highly motivated, their motivation maybe of rather poor quality, that is, being controlled rather than autonomous in nature. The present data indicate that when partners experience their helping role as a burden, it signals an underlying pressuring motivation to support their partner with chronic pain. Further studies will be necessary to investigate ways to make partners move away from controlled towards more autonomous reasons for support provision. In this context, one RCT study with lung cancer patients and their family caregivers is informative, as inclusion of SDT components in a treatment program was found to yield promising results [50].

Limitations and suggestions for future research

The current study has several limitations that warrant mention and provide directions for future research. First, data are correlational in nature, which makes it impossible to discern causal relationships and to provide temporal explanations. Perhaps, it is the case that partners experiencing a greater sense of well-being are able to more easily assist patients, or find it less burdensome, or that those patients more satisfied with their relationship behave in ways that contribute to their partner's relationship-based need satisfaction and autonomous helping motivation. Future longitudinal studies may need to examine possible potential benefits of autonomous helping motivation in explaining personal and relational well-being over time. Another interesting avenue for future research, for which longitudinal designs are a prerequisite, is the investigation of changes in partner's support behavior and motivation to

provide support after the onset of chronic pain in couples. Also diary studies are promising in this regard because it may show considerable day-to-day variation with resultant variation in partner and ICP outcomes. If helping motivation is dynamic, it should also be susceptible to change due to experimental activation, for which experimental designs might be useful to extend the current findings. A second limitation is that no actual amount of assistance provided or received was measured in this study, as we only focused upon the motives for helping. Third, all obtained data relied solely on self-reports. Taking observational measures into account might be an important focus for further inquiry, to examine in which helping behavior partners engage and how that influences partner's helping exhaustion and patient's pain outcomes. Fourth, although post-hoc power analyses⁴ showed that the present study with about 50 ICP/partner dyads had more than 90% power to detect large effects ($r > .50$), it had less than 60% power to detect small to medium effects ($r < .30$), making it possible to miss effects. Future studies could replicate our findings with a bigger sample size. Fifth, our sample was one of committed, generally satisfied couples. This selection bias possibly led to more autonomous helping motives in partners. It may be that relationships are already broken down when partners experience high levels of controlled motivation. However, previous research with chronic pain patients has shown similar response rates and the characteristics of the current sample (e.g., gender and age) were comparable with other studies (e.g. [49]). Future research could also gain further insight whether a particular combination of scores on autonomous and controlled motivation is critical. There are already some studies about different motivational profiles (e.g. [50–52]), showing that more motivation is not necessarily better. That is, although individuals may display elevated levels of controlled motivation

⁴ Post-hoc power analyses indicated that with a sample of size 48 there is about 90% power to detect the observed effects of partners' helping motivation on partners' personal well-being, distress, and relationship quality. The post-hoc power for the indirect effects of relative helping motivation through helping exhaustion on partners' well-being and psychological distress, and the indirect effect through relationship-based need satisfaction on relationship quality were all above 90%, while for other indirect effects post-hoc power was substantially smaller. The observed moderation effect of pain intensity outlined in the results section (hypothesis 3) had relatively low post-hoc power too (about 60%).

compared to others, while being equal in terms of autonomous motivation, the additional presence of controlled motivation does not yield more beneficial functioning, on the contrary. Future studies in the area of helping motivation could also examine such motivational profiles in greater detail. Finally, future studies could identify antecedents of autonomous helping motivation, which may provide more specific tools for pain treatment with involvement of partners.

Despite these limitations, the present study provides new insight into why partners of ICPs may become distressed and how they impact ICP outcomes. When partners are volitionally committed to provide help rather than experiencing it as a pressuring duty, their basic psychological needs in the relationship with their ICP are more likely to get fulfilled and they may experience less helping exhaustion. This, in turn, relates positively to their own personal and relational well-being. Moreover, autonomous helping motivation was also associated with a better relational functioning of ICPs in need of help, that is, those with high levels of pain. In short, the SDT-perspective seems promising to provide new insights in intimate partner interactions in a context of pain and awaits further testing.

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Tables

Table 1

Correlations among Measured Variables in Individuals with Chronic Pain (below diagonal) and Partners (above the diagonal)

	1	2	Outcome measures						Mediators				
	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Relative autonomous helping motivation ^A	-	-	-	.40**	.43**	-.42**	-.41**	.44**	.65**	.56**	.59**	.60**	-.68**
2. Pain Intensity ^B	-.10	-	-	-	-	-	-	-	-	-	-	-	-
3. Disability ^B	-.09	.65**	-	-	-	-	-	-	-	-	-	-	-
4. Life Satisfaction	.20	-.23	-.21	.39**	.58**	-.66**	-.63**	.38*	.46**	.36*	.50**	.37*	-.53**
5. Positive Affect	-.05	-.20	-.19	.42**	.15	-.67**	-.68**	.34*	.47*	.25	.62**	.36*	-.61**
6. Negative Affect	-.06	.25	.19	-.40**	-.71**	.23	.83**	-.56**	-.54**	-.37**	-.57**	-.49**	.63**
7. Psychological distress	.03	.12	.19	-.46**	-.70**	.78**	.29*	-.41**	-.53**	-.34*	-.59**	-.49**	.64**
8. Relationship quality	.15	-.20	-.17	.21	.03	-.29*	-.15	.35*	.68**	.65*	.54*	.64**	-.46**
9. Overall need satisfaction	.21	-.13	-.13	.21	.21	-.41**	-.27	.76**	.46**	.90**	.89**	.90**	-.56**
10. Autonomy satisfaction	.23	-.15	-.15	.17	.02	-.23	-.11	.72**	.87**	.33*	.69**	.74**	-.40**
11. Competence satisfaction	.03	-.06	-.06	.15	.33*	-.42**	-.28	.52**	.87**	.61**	.36*	.69**	-.57**
12. Relatedness satisfaction	.30*	-.12	-.12	.23	.20	-.42**	-.30*	.77**	.90**	.70**	.65**	.45**	-.53**
13. Helping exhaustion ^A	-	-	-	-	-	-	-	-	-.56**	-.40**	-.57**	-.53**	-

Note. Values along the diagonal (bold and italic) represent within-couple correlations. ^A Variables only assessed among partners; ^B Variables only assessed among ICPs. * $p < 0.05$, ** $p < 0.01$

Figure – Legends

Fig. 1. Flowchart of how final sample size was obtained.

Fig. 2. Mediation model of the association between partners' helping motivation and different partner outcomes. Path coefficients are standardized. * $p < 0.05$, ** $p < 0.01$. Control variables (partner's age and gender) are not displayed because none of them was significant.

Fig. 3. Interaction effect of partners' helping motivation and ICPs' pain intensity on ICP-perceived relationship quality.

Figures

Figure 1

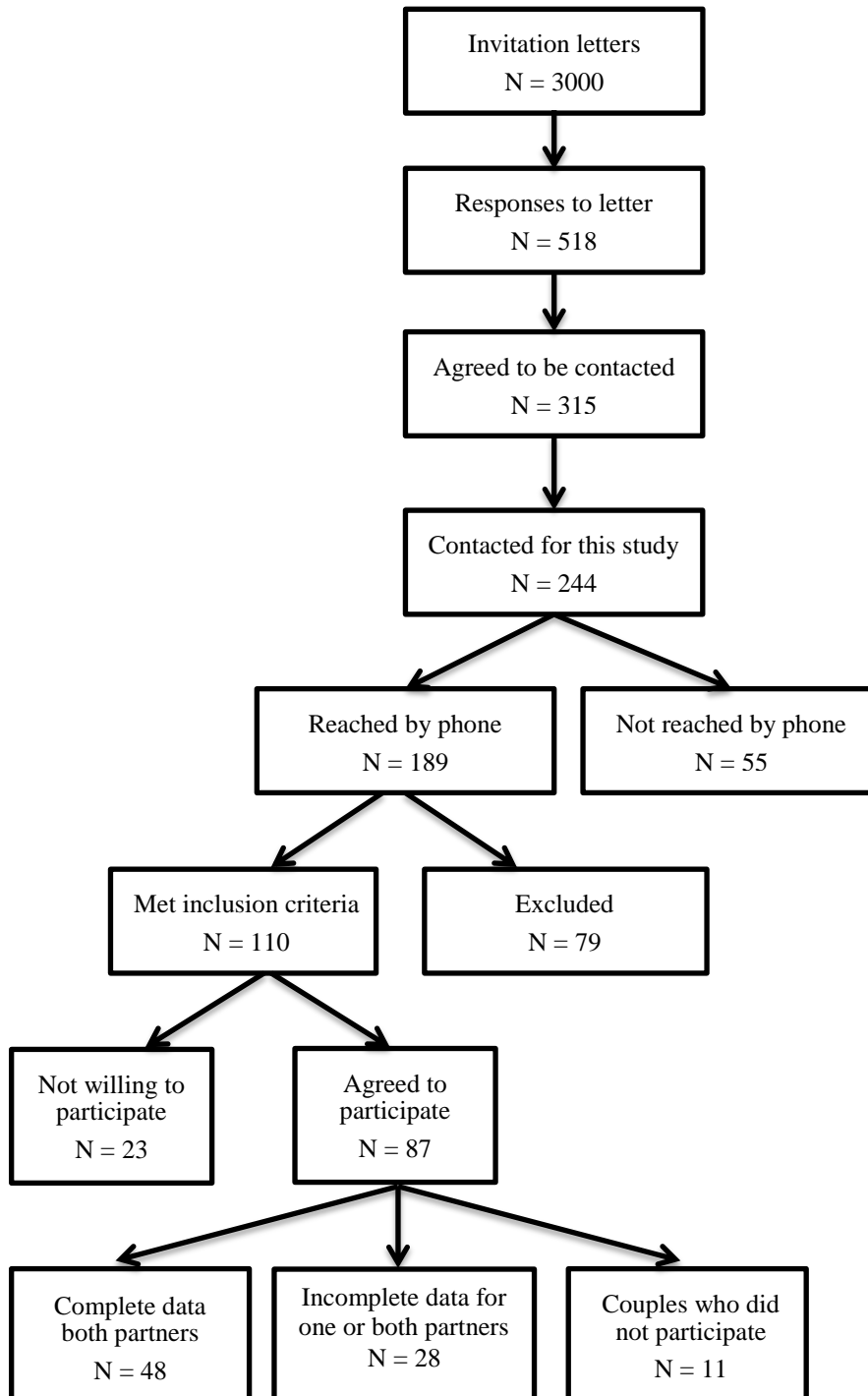


Figure 2

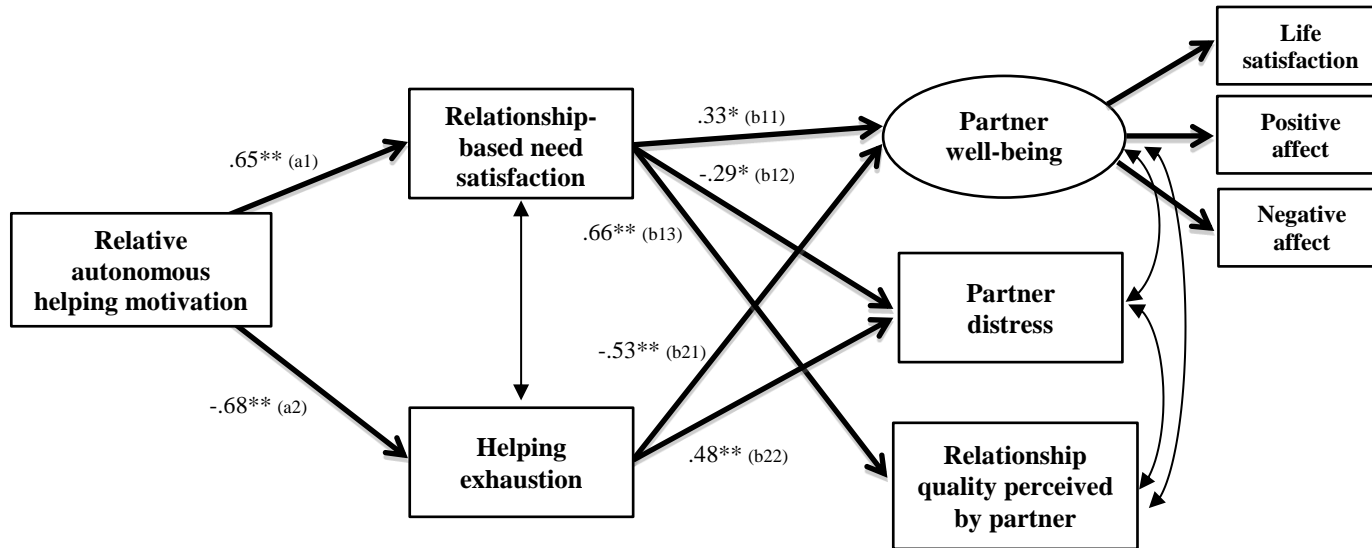


Figure 3

