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The Effects of Partners' Helping Motivation on Chronic Pain Patients' Functioning over Time

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Highlights

- Patients' needs are less frustrated over time when partners provide volitional help
- When patient needs are frustrated, this predicts increases in psychological distress
- Patients' needs satisfaction predicts increases in wellbeing and decreases in stress

Running title: Helping motives & patients' functioning over time

Abstract

To understand when and why the provision of help by a partner of an individual with chronic pain (ICP) yields benefits, according to Self-Determination Theory, it is critical to consider the extent to which partners' helping responses are supportive of the basic psychological needs of the ICP as well as the motives underlying these helping responses. The present study ($N=141$ couples), spanning three measurement moments over six months, investigated temporal associations between partners' helping motivation, ICPs' psychological needs, and ICPs' functioning across time (i.e., wellbeing, psychological distress, and disability). Results showed that partners' autonomous or volitional helping motivation (Time 1) predicted decreases in ICPs' need frustration (Time 2) and ICPs' need frustration (Time 2) predicted increases in ICPs' psychological distress (Time 3). Further, ICPs' need satisfaction (Time 2) predicted increases in wellbeing (Time 3) and decreases in psychological distress (Time 3). The link between need frustration and ICPs' wellbeing (Time 1 - Time 2) was bidirectional, with both reciprocally relating to one another over time. Finally, associations between ICPs' disability and both partners' helping motivation and ICPs' need-based experiences were non-significant. Implications for research and clinical practice are discussed in the discussion section.

Perspective: Partners' helping motives and ICPs' psychological needs seem to be important to consider when investigating the role of spousal responses, as they could (indirectly) predict changes in wellbeing and psychological distress of individuals with chronic pain over time.

Keywords: chronic pain couples; longitudinal study; wellbeing; helping motivation; self-determination theory

Introduction

Because partners of individuals with chronic pain (ICP) may differ considerably in their helping responses (e.g., providing emotional, instrumental and informational support ⁴), various attempts have been undertaken to categorize helping responses of close others in terms of its expected implications for ICP's functioning (e.g., ⁹). To fully understand whether partners' helping response is truly helpful and promotes ICP's adjustment, the present research draws on Self-Determination Theory (SDT, ^{7,34}), a broad theory on human motivation. Within SDT, it is argued that all people have three inherent psychological needs, that is, the need for autonomy (i.e., experiencing a sense of psychological freedom and choice), relatedness (i.e., feeling close and connected to others), and competence (i.e., experiencing a sense of effectiveness and mastery). These needs are essential as their satisfaction serves as fundamental nutrients for individuals' psychological well-being and adjustment ⁷ more broadly as well as the quality of one's romantic relationship more specifically. Apart from considering the extent to which helping responses are supportive for the basic *psychological needs* of the person in pain ^{7,30}, the theory also emphasizes different *types of motives* underlying partners' helping responses ^{16,17}, as not all motives are said to be equally need-conducive.

Specifically, two broad types of *motivation* are distinguished; i.e. autonomous and controlled motivation ³⁹. When autonomously motivated, individuals help others because they derive inherent satisfaction from the act of helping itself or because they see the value of their helping behavior, either for themselves or for the recipient of help. In contrast, when controlled motivated, help is provided to avoid criticism from the help recipient or out of guilt feelings and pressured loyalty towards the recipient of help. In other words, controlled motivated help is phenomenologically experienced as a "should", whereas autonomously motivated help more willingly emanates from the person's interests and commitments.

Available research indicates that both the help provider^{6,8,13,19,24,28,33} and the recipient of help⁴³ benefit more when the help originates from autonomous instead of controlled motives. Recently, the motives underlying pain-related social support have received initial attention. Specifically, a diary study charting the variability in helping motivation and adjustment on a daily basis indicated that on days that partners reported providing help for autonomous reasons, ICPs experienced less relational conflict as well as having received more help, an effect that could be accounted for by improvements in ICP's need-based functioning. In addition, daily autonomous helping motivation contributed indirectly, that is, through improvements in need-based functioning, to ICPs' positive and negative affect, their satisfaction with the received help, and perceived disability¹⁷.

The present study is the first to assess the temporal associations between partners' helping motivation and ICPs' functioning across a 6-month period, with ICPs' relationship-based need satisfaction and frustration considered as intervening variables. Specifically, a series of structural models tested this in a very conservative way by controlling for initial levels of all variables in each model and for all within-time associations. Specifically, the present study examined whether partners' autonomous helping motivation at the baseline assessment (T1) would predict changes in ICPs' relationship-based need satisfaction and frustration three months after baseline (T2), which, in turn, would predict changes in ICPs' wellbeing, psychological distress and disability six months after baseline (T3). We expected that a) partners' autonomous helping motives would predict increases in ICPs' satisfaction and decreases in ICPs' frustration of relationship-based needs, and b) that ICPs' need satisfaction would predict enhanced wellbeing and diminished psychological distress and disability, whereas opposite findings were expected for ICPs' need frustration.

Method

Study design and procedure

The present study is part of a larger study, the “Helping Motivation Diary and Longitudinal Study” (HMDAL-Study), among ICPs and their partner, which comprises, apart from the longitudinal study that is reported herein, also diary assessments (see ^{14,17}). Participants who gave their agreement to be informed about studies performed at our lab were contacted by telephone (1) to receive more information about the present study and (2) to assess inclusion criteria. If both partners in a couple reported having chronic pain, the individual with the longest pain duration was chosen as the ICP. ICPs and their partner were asked to complete questionnaires at three time points, spread across 6 months. Assessment with a 3-month interval was chosen as three months is enough time to observe changes in our key study variables ¹⁷ but also offered us the practical advantage of carrying out the research within six months. The informed consents and baseline questionnaires (T1) were administered via a home visit. Both partners received a link and a personal code for completing the other questionnaires (T2 and T3) online on a survey tool called LimeSurvey. When there was no computer or internet available, or participants did not have enough experience with computer/internet, they received a paper version. At T1 (total $N = 140$ ICPs and 140 partners), 39 ICPs (27.86%) and 31 partners (22.14%) chose to use the paper versions of the questionnaires. As a sign of appreciation, all couples received a fee of 30 euros after completing the questionnaires at T2 and T3. To enhance completion rates we reminded participants by means of e-mail and/or telephone. This study was approved by the ethical committee of the Faculty of Psychology and Educational Sciences of Ghent University.

Participants

Participants were couples, recruited through the Flemish Pain League (FPL), an umbrella organization for ICPs, and the Flemish League for Fibromyalgia Patients (FLFP), which is an organization specifically oriented to individuals with fibromyalgia. Of all invited couples 79.21% agreed to take part (for more recruitment details see ^{14, 17}), that is, 141 couples participated in the longitudinal study, with 97 couples being members of the FPL and 44 being members of the FLFP. Inclusion criteria for participation of individuals with chronic pain (ICPs) in the present study were (1) having chronic pain for at least 3 months, (2) physically living together with a partner for at least one year, and (3) being sufficiently proficient in Dutch.

Although 141 couples agreed to take part in the “HMDAL-study”, only data of 140 ICPs (data of one ICP got lost via regular mail) and 140 partners (one partner was not at home during the home visit of T1) were collected. For T1, complete data were available for 139 couples. At T2 (3 months later than T1), 134 partners and 134 ICPs participated again. At T3 (6 months later than T1), 131 partners and 129 ICPs participated. For the current study, cases with missing values were included in the analyses using full-information maximum likelihood estimation (FIML ²¹). As FIML can only be used when no systematic differences are found between participants who stay in versus participants who drop out, both subsamples were compared on the study variables. With regard to the ICP, Little’s missing completely at random (MCAR) test produced a normed χ^2 (χ^2/df) of 112.25/100, $p = 0.19$, which means that no significant differences were found between ICPs who participated three times and those ICPs who participated only once or twice. With regard to the partners, Little’s missing completely at random (MCAR) test was equally found to be non-significant, χ^2 (χ^2/df) of 3.58/5, $p = 0.61$, thus implying that no significant differences were found between partners who participated three times and those partners who participated only once or twice. This

indicates that the data were likely to be missing at random, and that it is safe to impute cases with missing values in the analyses.

At T1, the majority of ICPs were female ($N = 115$; 82.1%); the mean age of ICPs and their partner (80.7% males) was 52.38 years ($SD = 11.72$) and 53.61 years ($SD = 12.02$), respectively. All couples were heterosexual (except for two) and Caucasian. More than a third of the sample (36.9% of ICPs; 34.3% of partners) reported that they have followed education beyond the age of 18. Almost all couples were married or legally cohabiting (81.5%), with the mean relationship duration being 25.22 years ($SD = 14.96$). The majority of partners were employed ($N = 91$; 65%), while only 20.7% of ICPs ($N = 29$) were employed. Almost all ICPs reported pain in more than one location ($M = 4.02$, $SD = 1.68$; range 1–7), with pain in the back (90.1%), neck (75.2%), and lower extremities (62.1%) being reported most frequently. Mean pain duration was 15.49 years ($SD = 13.15$). On a scale from 0 to 10, ICPs reported a mean pain intensity of 6.90 ($SD = 1.41$) and a mean disability of 6.50 ($SD = 1.94$). Fifty-six partners (i.e., 40.3%) also reported pain complaints during the past three months (which is similar to other studies with chronic pain couples, e.g. Issner, Cano, Leonard, & Williams, 2012). Paired-samples t -tests showed that pain duration ($M=9.84$, $SD=11.87$), pain intensity ($M=4.30$, $SD=1.72$) and disability ($M=2.77$, $SD=2.21$) were significantly lower in partners compared to the ICPs (all $ps < .05$).

Measures

Helping motivation

At all measurement times (T1, T2, T3), partners' helping motivation was assessed by the Motivation to Help Scale (MHS^{15, 43}) that was modified in a previous study for use with chronic pain couples (see¹⁶). Specifically, partners received a list of 20 reasons (instead of the original set of 11 items) for helping or supporting their partner in pain. Partners reported 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”). In line with theory⁷ and previous research^{16, 17}, items of external and introjected motivation were summed up to represent controlled motivation to help, whereas items of identified and intrinsic motivation were summed up to represent autonomous motivation to help. Cronbach’s alpha’s for T1, T2 and T3 were .88, .87, .90 for autonomous helping motivation and .78, .81, .80 for controlled motivation, respectively. In line with previous work (e.g.,^{17,43}), an overall index reflecting the Relative Autonomous Helping Motivation (i.e., RAHM) was calculated by subtracting controlled motivation from autonomous motivation scores.

Relationship-based Need Satisfaction and Frustration

ICPs’ need satisfaction and frustration were assessed at each time point with the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS;³) adapted for use within intimate relationships (see^{37,38}). The 24 items were scored on a 5-point Likert scale ranging from 1 (completely untrue) to 5 (completely true). Higher scores reflect higher levels of need satisfaction or frustration. All items started with “In the relationship with my partner” and were for example: “..., I can freely take decisions” (i.e., autonomy satisfaction), “..., I am confident that I can do things right” (i.e., competence satisfaction), “..., I feel that s/he cares about me” (i.e. relatedness satisfaction), “..., most of the things I do feel like I have to” (i.e., autonomy frustration), “..., I have serious doubts about whether I can do things well” (i.e., competence frustration), and “..., I sometimes have the impression that s/he dislikes me”), (i.e., relatedness frustration). Participants’ relationship-based need satisfaction and frustration scores were computed by summing up scores for all items included in each of the three

subscales for satisfaction or frustration, respectively. Need satisfaction showed good reliability (T1 $\alpha=.84$; T2 $\alpha=.85$; T3 $\alpha=.88$); also need frustration had a good internal consistency (T1 $\alpha=.85$; T2 $\alpha=.88$; T3 $\alpha=.90$).

Wellbeing

To measure subjective “*wellbeing*”, we tapped into two different aspects: a cognitive evaluation of one’s quality of life and one’s experience of positive emotions. The overall quality of life (QoL) in ICPs was measured every time using a linear analogue scale²⁵. This is a vertical graded, 10 cm line, ranging from “0” (the worst imaginable quality of life) to “100” (the best imaginable quality of life). The use of this rating scale allows ICPs to give a rating of their overall perceived quality of life. To measure positive affect, the positive affect subscale (10 items; e.g., enthusiastic) of the widely used Positive and Negative Affect Schedule (PANAS)⁴² was administered. ICPs completed this questionnaire at each time point. Each item was rated on a 5-point scale ranging from ‘1’ (very slightly) to ‘5’ (extremely) to indicate the extent to which the affect was experienced during the past two weeks. Cronbach’s alphas in the current study were .88, .90 and .88 for T1, T2 and T3, respectively. For the present study, scores for “*wellbeing*” were computed by averaging the standardized scores for overall quality of life and positive affect.

Psychological distress

To measure ICP’s “*Psychological distress*” we used the subscales of the Dutch 21-item version² of the Depression Anxiety Stress Scale (DASS)²², which is designed to measure the negative emotional states of depression, anxiety and stress during the past week. Each of the three DASS-scales contains 7 statements that are to be rated on a four-point Likert Scale ranging from “0” (not at all) to “3” (very much), e.g., “I was unable to become enthusiastic about anything” (depression); “I felt scared without any good reason” (anxiety) or “I found it difficult to relax” (stress). Cronbach’s alphas in the current study were .88, .90, .91 for

depression, .80, .82, .85 for anxiety and .88, .91 and .91 for stress for T1, T2 and T3, respectively. In the present study, scores from the three DASS-subscales were used as indicators for our latent variable “*psychological distress*”.

Pain intensity and disability

ICPs’ pain intensity at T1 and disability (assessed at all three time points) were assessed with the Graded Chronic Pain Scale (GCPS)²⁰. 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). In the present study, Cronbach’s alpha was .76. A disability score was computed by calculating the mean score out of three items assessing the interference of pain with activities during the last 3 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). Cronbach’s alpha’s were .88, .92, .92 for T1, T2 and T3, respectively.

Statistical plan

First, to explore the data, correlational analyses were conducted and the means and standard deviation of the key study variables were inspected. Next, preliminary analyses were conducted to examine differences in the study variables in terms of ICPs’ sex, chronic pain in both versus single partner, age (both partner and ICP), relationships duration, ICP’s pain duration and intensity. Based on these preliminary analyses, a choice was made as to which control variables were further accounted for in the primary analyses. The primary analyses concerned structural equation analyses as tested in MPlus 7.4²⁶. As suggested by Hu and Bentler (1999), we evaluated model fit based on a combined consideration of the Chi-square statistic (χ^2), the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root-Mean-square Residual (SRMR). The χ^2 should be as

small as possible. A CFI value of .90 or higher indicates a reasonable fit, whereas for RMSEA and SRMR values of .08 or lower indicate acceptable fit¹⁸.

Results

Descriptive Statistics and Preliminary Analyses

Means, standard deviations, and correlations among the study variables are presented in Table 1.

- Insert Table 1 about here -

A MANCOVA examined the effects of several important background variables (i.e., ICP's sex, presence of chronic pain in both versus a single partner, partner and ICPs' age, relationship duration, ICPs' pain duration and ICPs' pain intensity) on all of our study variables measured at T1, T2 and T3. A significant multivariate effect for ICPs' pain intensity (Wilk's Lambda = .39; $F(18, 94) = 8.23, p < .001$) was obtained. Subsequent univariate effects were present for ICPs' need satisfaction at T2 ($F(1, 111) = 6.72, p < .05$), with higher pain intensity linked to less need satisfaction ($r = -.19, p < .05$). Univariate effects for ICPs' pain intensity were also significant for ICPs' well-being at T2 ($F(1, 111) = 27.33, p < .001$) and T3 ($F(1, 111) = 4.05, p < .05$), for ICPs' psychological distress at T1 ($F(1, 111) = 11.15, p < .01$), T2 ($F(1, 111) = 13.47, p < .001$), and T3 ($F(1, 111) = 6.62, p < .05$), and for ICPs' disability at T1 ($F(1, 116) = 58.47, p < .001$), T2 ($F(1, 111) = 26.94, p < .001$) and T3 ($F(1, 111) = 29.44, p < .001$). The direction of effects was similar in each of these cases (see Table 1), with ICPs with higher pain intensity at T1 reporting lower well-being, higher psychological distress, and higher disability. Based on this MANCOVA analysis, we decided to control for ICPs' pain intensity in all subsequent analyses.

Structural Equation Modeling

Well-being

Regarding ICP's wellbeing, we tested two models which are graphically displayed in Figure 1. A first model was tested with ICPs' relationship-based need satisfaction (Model 1a) as intervening variable in the relation between partners' helping motivation and ICP wellbeing and a second model with ICPs' relationship-based need frustration as intervening variable (Model 1b). Estimation of Model 1a ($\chi^2(25)=39.37, p = .03, RMSEA=.06, CFI=0.98, SRMR=.06$) showed no significant effect of partners' helping motivation on ICPs' relationship-based need satisfaction across time. Yet, relationship-based need satisfaction was related to ICP wellbeing across time ($\beta = .14, p < .05$ from T2 to T3). Replacing need satisfaction by need frustration in Model 1b ($\chi^2(24) = 30.60, p = .17, RMSEA=.04, CFI=.99, SRMR=.04$) indicated that partners' autonomous helping motivation predicted significant decreases in ICP need frustration across time ($\beta = -.15, p < .01$ from T1 to T2). Further, from T1 to T2, ICP need frustration and ICPs' wellbeing were negatively related, with bidirectional relationships emerging.

- Insert Figure 1 about here -

Psychological distress

For "psychological distress", we followed a two-step procedure¹ as the three DASS-subscales were used as indicators for our latent variable. First, a confirmatory factor analysis (CFA) was used to test the quality of the measurement model of the study constructs. Second, the structural models were tested. The measurement model concerning psychological distress included three latent variables (i.e., psychological distress as measured at three measurement points) and nine indicators (i.e., depression, anxiety and stress as three indicators of psychological distress, each measured at three measurement points). The measurement errors of the same indicators across time were allowed to covary as the same indicators share error variance over different moments in time⁽³²⁾. Further, the factor loadings of the same indicators were set equal across the three measurement points. The model adequately fitted

the data, $\chi^2(19) = 16.73$, $p = .61$, CFI = 1.00, RMSEA = .00, SRMR = .03. Moreover, all factor loadings were highly significant ($p \leq .001$), with values ranging from .82 to .88 (mean = .85).

Next, we tested two models, which are graphically displayed in Figure 2, with ICPs' psychological distress as the outcome, where the first model (i.e., Model 2a) considered ICPs' relationship-based need satisfaction and the second model (i.e., Model 2b) considered ICPs' relationship-based need frustration as a potential intervening variable. Estimation of Model 2a ($\chi^2(84)=100$, $p = .11$, RMSEA=.04, CFI=.99, SRMR=.05) showed no significant effect of partners' helping motivation on ICP need satisfaction. Yet, ICP need satisfaction significantly predicted a decrease in psychological distress over time ($\beta = -.21$, $p < .001$). Estimation of Model 2b ($\chi^2(3)=93.99$, $p = .19$, RMSEA=.03, CFI=.99, SRMR=.05) showed a significant effect of partners' autonomous helping motivation on decreases in ICP need frustration from T1 to T2 ($\beta = -.11$, $p < .05$). Further, ICP need frustration significantly related to an increase in ICP psychological distress ($\beta = .22$, $p < .001$). When testing whether the indirect path from partners' helping motivation to ICP psychological distress via ICPs' relationship-based need frustration was significant²⁹, the results showed that this was not the case ($\beta = -.02$, $p = .11$). This indirect effect may not have reached full significance because of the conservative way in which paths were tested (i.e., controlling for initial levels of all variables in the model and for within-time associations) and also given the multi-informant methodology.

- Insert Figure 2 about here -

Disability

Next, Figure 3 provides an overview of the results for ICP disability, where the first model (i.e., Model 3a) tested ICPs' relationship-based need satisfaction and a second model (i.e., Model 3b) ICPs' relationship-based need frustration as intervening variable. As for model 3a ($\chi^2(28)=46.34$, $p = 0.02$, RMSEA=.07, CFI=.97, SRMR=.05), there was no

significant effect of partners' helping motivation on ICP need satisfaction and no significant effect of ICP need satisfaction on disability. Model 3b ($\chi^2(27)=39.93, p = 0.05, RMSEA=.06, CFI=.98, SRMR=.04$), involving need frustration as an intervening variable, indicated that, as noted before, that partners' autonomous helping motivation predicted a decrease in ICP need frustration across time ($\beta = -.12, p < .05$), but ICP need frustration failed to relate to disability across time.

- Insert Figure 3 about here -

Discussion

In this study, we investigated whether partners' helping motivation would indirectly relate to ICP outcomes, via ICPs' need-based experiences, as defined by Self-Determination Theory (SDT) ³⁴. Need satisfaction is distinguished from frustration as the absence of satisfaction does not by definition denote its frustration. Partners can either support or thwart each other's needs; a lack of need satisfaction involves being indifferent towards the partner's needs, whereas need frustration involves a more active way of undermining the partner's needs ⁴⁰.

The role of ICPs' need-based experiences

Results showed an effect of partners' helping motivation on ICPs' basic psychological needs which in turn had an effect on ICP's psychological functioning, although the indirect effect did not reach significance. Specifically, when partners volitionally provide help instead of feeling pressured to do so (i.e., autonomous, relative to controlled, helping motivation), ICPs report less relationship-based need frustration over time, whereas the association with ICPs' need satisfaction was nonsignificant, which was rather surprising considering the significant correlations. The multi-informant nature of the data, involving separate reports of partners and ICPs and the conservative way of testing may be a possible reason for this, as are the high mean scores for need satisfaction, suggesting that there was not much room for

improvement in need satisfaction over time. With regard to ICP need frustration, results were in line with a diary study where the fluctuations in partners' daily helping motives were predictive for changes in ICPs' daily functioning ¹⁷.

When focusing on the associations between ICPs' need-based experiences (i.e. the need for autonomy, competence and relatedness within a romantic relationship) and ICP outcomes, the present results partially supported the proposition that basic psychological needs are essential ingredients for optimal functioning ¹¹. More specifically, need satisfaction predicted an increase in ICPs' wellbeing and a decrease in ICPs' psychological distress, whereas need frustration predicted an increase in ICPs' psychological distress. This finding is in line with the main postulates of SDT about the importance of three basic psychological needs for psychological wellbeing ⁷ and with another study showing that ICPs' need-based experiences were predictive for ICPs' daily functioning ¹⁷, ICPs' self-esteem, life satisfaction and psychological symptoms six months later ³⁶.

With regard to ICPs' disability over time, there were no significant associations with ICPs' need-based experiences nor with partners' helping motivation. This is not in line with a previous diary study ¹⁷, where partners' daily autonomous helping motives indirectly, through ICPs' relationship-based need satisfaction and frustration, related to the change in ICPs' daily disability. One possible hypothesis is that need-based experiences only play a role in short-term within-person differences in disability, whereas it is more difficult to influence disability at the between-person level.

Theoretical and clinical implications

Romantic partners are especially impactful in a person's life. They often have the ability to pressure and persuade the other partner to adhere to medical treatment, encourage well behaviors (e.g., exercise) and provide emotional support, potentially leading to faster recovery ³⁵. The present study provided additional evidence for the important role spousal

responses play in ICPs' wellbeing. Specifically, findings suggest that partners' underlying motives for help are important to take into account when investigating the role of different spousal responses, independently of the specific kind of behavior. In this study we found evidence for the temporal associations between partners' helping motives and ICPs' need frustration. Autonomously motivated partners might be less rigid and more flexible in prioritizing ICPs' needs above their own needs and may be more receptive for feedback of the ICP in the caregiving process⁴¹. An autonomous helping motivation may prevent partners from becoming overprotective^{10,11} or solicitous^{5,31} and thereby buffer against thwarting ICPs' need for autonomy (e.g., receiving unwanted/unnecessary help), competence (e.g., feeling incapable of taking care for oneself) and relatedness (e.g., cold interaction or feeling distance). These results reveal that it is important to provide a need-supportive environment to patients.

Limitations and future research

There are some limitations that should be considered. First, despite our conservatory analyses, causality cannot be inferred, as third, unmeasured variables may account for the observed associations. Future research should better unpack the direction of effects by using experimental designs priming partners' helping motivation. Second, the used measures are all self-report scales, which may create a response bias through the phenomenon of social desirability. Third, most theoretically relevant path coefficients were small in size. Given the multi-informant nature of the data and the conservative way of testing this is not totally unexpected. However, future research with a larger sample of participants should aim to replicate the current pattern of findings before drawing firm conclusions. Fourth, the study sample mostly included female patients, with a long relationship duration, so caution is needed in generalizing the present study's results to diverse populations. Future research should include more male patients and patients in both short and long term relationships.

Further, as the current study had the explicit intention to define helping responses as broad as possible (consistent with previous research⁴³), it would be very interesting in future research to specify the type of help being provided and examine whether the motives for one type differ from another type. Finally, as previous research has shown that helping responses that promote functional dependence are generally considered more maladaptive^{23,27}, a final issue that deserves further attention in future research would be to investigate whether ICPs' functional independence gets promoted when ICPs psychological needs are met. Of course, next to these limitations and directions for future research, this study also has several strengths, for example the low drop-out of participants and the multi-informant approach. With regard to relationship duration, the fact that all couples lived together for at least one year could also be seen as a strength of the current study as these participants may have developed a more stable pattern of motivational functioning that is less susceptible for change.

Conclusion

The current study shows that partners' autonomous, relative to controlled, helping motives have a positive effect on ICPs' relationship-based need frustration. ICPs' relationship-based need satisfaction and frustration were predictive for changes in ICPs' wellbeing and psychological distress over time. Future research could further explore how partners can nurture ICPs needs and identify other antecedents of partners' helping motivation (e.g., goal conflict¹⁴), which could then be used as targets for clinical interventions.

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Figure Legends.

Figure 1. Structural equation model of partners' helping motivation, ICPs' need-based experience and wellbeing.

Figure 2. Structural equation model of partners' helping motivation, ICPs' need-based experience and psychological distress.

Figure 3. Structural equation model of partners' helping motivation, ICPs' need-based experience and disability.

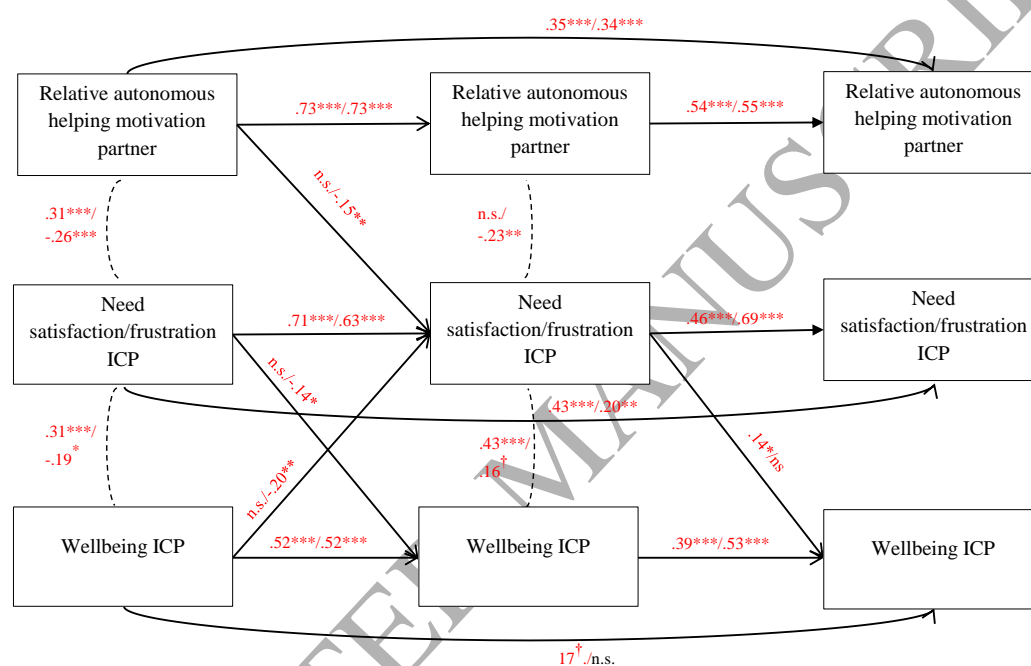


Figure 1. Structural equation model of partners' helping motivation, ICPs' need-based experience and wellbeing.

Note. Path coefficients of Model 1a with need satisfaction are presented before brackets, whereas path coefficients of Model 1b with need frustration are presented after the brackets. We controlled for ICP pain intensity reported at T1. Coefficients shown are standardized path coefficients, $\dagger p < .10$, $* p < .05$, $** p < .01$, $*** p < .001$. For the sake of parsimony, only significant associations are presented.

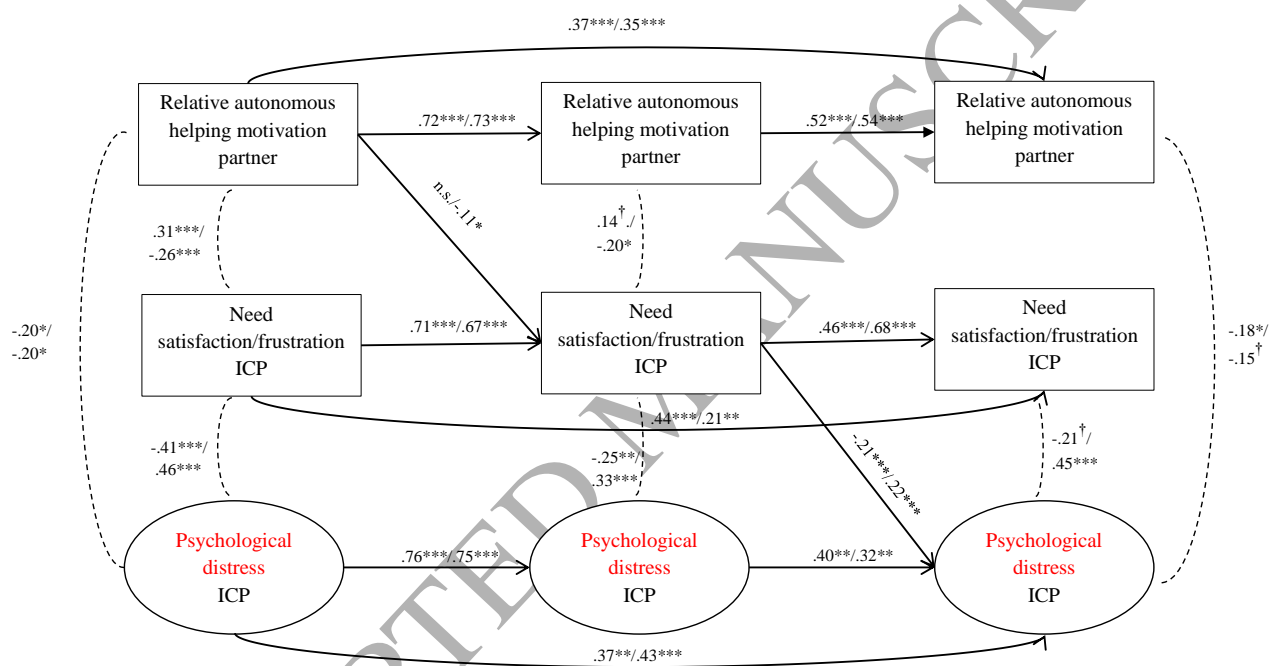


Figure 2. Structural equation model of partners' helping motivation, ICPs' need-based experience and psychological distress.
Note. Path coefficients of Model 2a with need satisfaction are presented before brackets, whereas path coefficients of Model 2b with need frustration are presented after the brackets. We controlled for ICP pain intensity reported at T1. Coefficients shown are standardized path coefficients, † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. For the sake of parsimony, only significant associations are presented.

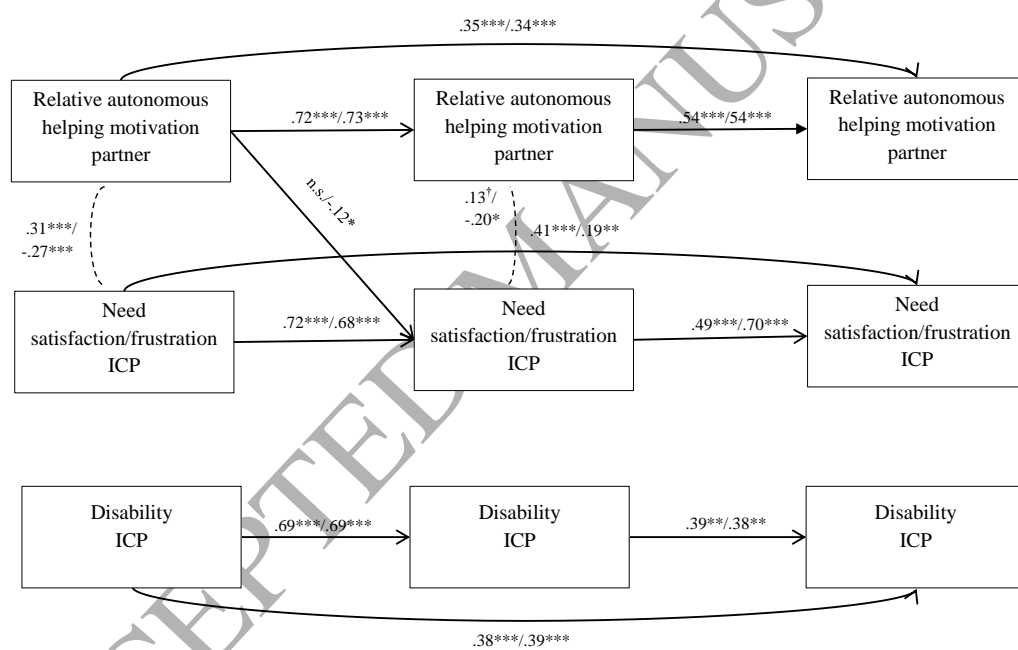


Figure 3. Structural equation model of partners' helping motivation and ICP need-based experience and disability.

Note. Path coefficients of Model 3a with need satisfaction are presented before brackets, whereas path coefficients of Model 3b with need frustration are presented after the brackets. We controlled for ICP pain intensity reported at T1. Coefficients shown are standardized path coefficients, $\dagger p < .10$, $* p < .05$, $** p < .01$, $*** p < .001$. For the sake of parsimony, only significant associations are presented.

Table 1. Means (M), Standard Deviations (SD) and Pearson Correlations among the Measured Variables

	Time 1						Time 2						Time 3						Pain Intensity
	RAHM (T1)	NS (T1)	NFR (T1)	WB (T1)	PD (T1)	DIS (T1)	RAHM (T2)	NS (T2)	NFR (T2)	WB (T2)	PD (T2)	DIS (T2)	RAHM (T3)	NS (T3)	NFR (T3)	WB (T3)	PD (T3)	DIS (T3)	
RAHM	-	.31***	-.27**	-.00	-.18*	-.01	.72***	.28**	-.29**	.12	-.20*	-.04	.73***	.23**	-.25**	.08	-.18*	.08	-.05
NS		-	-.66***	.31***	-.39***	-.10	.24**	.71***	-.66***	.23**	-.36***	-.11	.19*	.75***	-.57***	.25**	-.40***	-.04	-.10
NFR			-	-.22**	.46***	.21*	-.20*	-.57***	.71***	-.26**	.45***	.15†	-.21*	-.54***	.68***	-.10	.47***	.07	.18*
WB				-	-.44***	-.43***	.00	.29**	-.29**	.61***	-.35***	-.29***	-.03	.21*	-.25**	.43***	-.40***	-.22*	-.30***
PD					-	.35***	-.14	-.32***	.39***	-.43***	.84***	-.20*	-.13	-.30**	.36***	-.31***	.81***	.22*	.32***
DIS						-	.02	-.08	.11	-.48***	.30***	.68***	.02	-.05	.09	-.25**	.24**	.64***	.61***
RAHM							-	.25**	-.31***	.14	-.16†	-.08	.78***	.25**	-.31***	.10	-.19*	-.03	.09
NS								-	-.73***	.33***	-.37***	-.10	.15†	.76***	-.66***	.29***	-.43***	.03	-.19*
NFR									-	-.22*	.47***	.14	-.26**	-.74***	.83***	-.18*	.51***	.01	.05
WB										-	-.44***	-.57***	.10	.23**	-.27**	.55***	-.43***	-.41***	-.45***
PD											-	.29**	-.19*	-.31***	.45***	-.30***	.83***	.23**	.33***
DIS												-	-.12	-.11	.20*	-.27**	.24**	.64***	.44***
RAHM													-	.17†	-.24**	.06	-.22*	-.02	.13
NS														-	-.69***	.26**	-.42***	.04	.04
NFR															-	-.24**	.57***	.05	.14
WB																-	-.40***	-.34***	-.23*
PD																	-	.23**	.26**
DIS																		-	.46***
M	19.75	45.25	26.36	.04	-.00	6.50	19.74	45.37	25.46	.00	-.00	6.48	19.52	44.84	25.68	-.03	-.00	6.27	6.90
SD	12.77	7.13	8.20	12.90	7.07	1.94	13.82	7.39	8.82	12.54	7.79	2.02	13.89	8.10	9.36	11.94	8.13	2.13	1.41

Note. RAHM = partners' relative autonomous helping motivation, NS = ICPs' relationship-based need satisfaction, NFR = ICPs' relationship-based need frustration, WB = ICPs' wellbeing, PD = ICPs' psychological distress, ICPs' DIS = ICPs' disability, with ICP= individual with chronic pain. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.