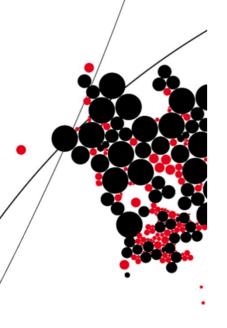


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Positive interpersonal relationships as strength within the context of chronic pain

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Abstract

Aim: Chronic pain negatively affects interpersonal relationships, as for example family and friends may avoid contact due to the invisibility of the illness. However, positive interpersonal relationships are an important part of well-being and health. In addition, positive relationships with others are strengthening for chronically ill individuals. As there was still less knowledge, this study aimed to explore positive interpersonal relationships as strength within the context of chronic pain. This study examined the view, use and coping possibilities of positive interpersonal relationships as strength while experiencing chronic pain.

Methods: To gain a greater insight into positive interpersonal relationships as strength within the context of chronic pain, twelve individuals from a chronic pain support group in Germany participated in this study. By means of a semi-structured interview with open-ended questions, they reflected about their positive relationships with others as strength. The researcher analyzed the interviews through constant comparison.

Results: The participants described their existing and new positive interpersonal relationships as strength through nine different aspects. For example, most participants mentioned positive relationships as a positive distraction and source of positive emotions for oneself and others. Other discussed aspects were for example fellowship within the support group/with others, or the participants mentioned belongingness through positive relationships as well as expressing kindness and nurturance towards others. Sometimes, different aspects were linked to each other. The participants reflected also various meanings of these aspects.

Discussion and conclusion: This study provided findings, which were consistent with findings from prior studies and expanded these findings. In addition, this study found complementary aspects of positive interpersonal relationships as strength, for example engaging in positive interpersonal relationships to relieve worse symptoms. These findings might contribute to an enhancement of health and well-being, as well as the intensification of established positive interpersonal relationships and the forging of new positive ties with others of individuals who live with chronic pain.

Samenvatting

Doel: Chronische pijn beïnvloedt intermenselijke relaties negatief, want familie en vrienden kunnen bijvoorbeeld het contact vermijden, vanwege de onzichtbaarheid van de ziekte. Echter zijn positieve relaties met anderen een belangrijke aspect van welbevinden en gezondheid. Verder worden positieve relaties met anderen als sterke kant bij mensen met een chronische aandoening gezien. Omdat erover nog weinig bekend was, onderzochte deze studie positieve relaties met anderen in de context van chronische pijn. Er werd onderzocht hoe positieve relaties met anderen als sterke kant wordt gezien, gebruikt en hoe deze relaties tot de coping met chronische pijn bijdragen.

Methoden: Om meer inzicht in positieve intermenselijke relaties binnen de context van chronische pijn te verkrijgen, hebben twaalf mensen vanuit een zelfhulpgroep voor chronische pijn in Duitsland aan deze studie deelgenomen. Door middel van semigestructureerde interviews met open vragen reflecteerden ze op hun positieve relaties als sterke kant. De onderzoeker analyseerde de interviews door middel van constant comparison.

Resultaten: De sterke kant van hun bestaande en nieuwe positieve intermenselijke relaties werd door negen aspecten weergegeven. Bijvoorbeeld noemden de meeste deelnemers positieve relaties als een positieve afleiding zoals bron van positieve emoties voor zelf en anderen. Verdere genoemde aspecten waren bijvoorbeeld kameraadschap binnen de zelfhulpgroep/met anderen, verbondenheid door positieve relaties of het laten zien van vriendelijkheid en zorg voor anderen. Soms waren verschillende aspecten met elkaar gerelateerd. De deelnemers beschreven ook verschillende meningen van de genoemde aspecten.

Discussie en conclusie: De bevindingen van deze studie kwamen overeen met bevindingen van eerdere studies en hebben deze verder verdiept. Daarnaast heeft deze studie aanvullende aspecten met betrekking tot positieve intermenselijke relaties als sterke kant gevonden, bijvoorbeeld positieve relaties om symptomen te verminderen. Deze bevindingen zouden niet alleen gezondheid en welbevinden kunnen bevorderen, maar ook al bestaande intermenselijke relaties en nieuwe relaties met anderen intensiveren van individuen die met chronische pijn leven.

Introduction

As invisible illness, chronic pain like neuropathic pain (Closs, Staples, Reid, Bennett, & Briggs, 2009) detrimentally affected interpersonal relationships. For example, neuropathic pain led to a loss of interpersonal relationships with family and friends and otherwise changed these relationships negatively. It also destructively affected the establishment of new relationships with others (Closs et al., 2009). Furthermore, women with chronic pain reported a negative impact on their emotional and sexual intimacy with others (Smith, 2003), thus these findings assumed a decreased social network and a possible risk for loneliness. Moreover, chronic illnesses negatively influenced the participation in social activities such as employment or relaxation activities (Noël, Frueh, Larme, & Pugh, 2005), which might have negative psychosocial consequences. However, Pietromonaco and Collins (2017) showed in a review about close relationships and health the importance of positive interpersonal relationships, for example such relationships appeared as essential for both adjustment and recovery while confronted with an illness or contributed to positive aspects like flourishing (Pietromonaco & Collins, 2017), thus they might be strengthening for healthy and chronically ill individuals. Further, interpersonal relationships were viewed as a strength considering the adjustment to a chronic illness, as identified in a study about inner strength among older adults by Nygren, Norberg and Lundman (2007). From this strengths perspective, positive and close interpersonal relationships could positively contribute to the experience of chronic pain.

The contribution of positive interpersonal relationships to the resilience of a chronic illness like chronic pain might be explained by the concept of *social resilience*, which defined the development of new positive interpersonal relationships and the involvement in these relationships as well as their maintenance (Cacioppo, Reis, & Zautra, 2011). Thus both existing and newly established positive interpersonal relationships could contribute positively to the adaptation to a chronic illness. In addition, Cacioppo et al. (2011) described *social resilience* as ability for regaining from social separation and life stressors. Therefore the need for positive interpersonal relationships as strength might be further underlined by the fact that chronic pain could facilitate loneliness due to the withdrawal from family and friends, as described earlier. Different aspects characterized *social resilience*. The first aspect Cacioppo et al. (2011) referred to described *possibilities to shape interpersonal relationships*. Such possibilities regarding the development of positive interpersonal relationships were for example friendliness, compassion and openness (Cacioppo et al., 2011). The second aspect of

social resilience described interpersonal resources (Cacioppo et al., 2011). Interpersonal resources referred for example to nurturance and empathy, sharing, active listening as well as taking others and their needs into account (Cacioppo et al., 2011). Moreover, the third aspect of social resilience referred to collective resources like tolerance and cohesiveness (Cacioppo et al., 2011). Taken together, these aspects of social resilience could reflect the dynamics of existing positive interpersonal relationships and also the dynamics for the establishment of new positive interpersonal relationships, not only during the confrontation with negative events, but also during the absence of adversity. In addition, social resilience can be experienced within different interpersonal relationships (Cacioppo et al., 2011) for example, within families or communities.

With regard to *social resilience* and positive interpersonal relationships as strength, there were different possibilities: For example, a qualitative study about personal strengths of individuals with a chronic illness identified strengths that emerged from an individual and positively influenced interpersonal relationships (Kristjansdottir, Stenberg, Mirkovic, Krogseth, Ljoså, Stange, & Ruland, 2018). The same study also identified interpersonal strengths related to the social network of individuals with chronic illnesses (Kristjansdottir et al., 2018). Another study described strengths that emerged from caring relationships with others (Nygren et al., 2007). A further possibility for positive interpersonal relationships as strength might be the establishment of new relationships, because both the experience and establishment of new interpersonal relationships were essential for a positive experience of a chronic illness, as shown in a study about the social experience of multiple sclerosis during the process of aging (Fong, Finlayson, & Peacock, 2006).

Strengths regarding to social relationships that emerged from an individual with a chronic illness were for instance helpfulness, empathy and kindness towards others (Kristjansdottir et al., 2018). Friendliness and helpfulness were also connected to another reported strength, namely the experience of positive emotions (Kristjansdottir et al., 2018). Boman, Häggblom, Lundman, Nygren and Fischer (2015) also illustrated in a study about inner strength in narratives of elderly women the connection between kindness, helpfulness and positive emotions, as through the engagement in social activities the women gained satisfaction for both themselves and others. This could mean that helping others and feeling positive could protect one's own health despite a chronic illness. The mutual connection between positive emotions within positive relationships might be able to foster resilience within the context of a chronic illness. Next to positive emotions, the women were also part of a group due to their involvement in social activities (Boman et al., 2015), in this way it could

be possible that activities with others prevent individuals with a chronic illness from loneliness and further health risks that go along with feelings of loneliness. Further, according to Sturgeon and Zautra (2010) social involvements are assumed to foster resilience to a chronic illness like chronic pain.

Positive interpersonal relationships as strength were not only reflected through individual strengths in connection to such relationships. They were also described through a kind and helpful interpersonal network (Kristjansdottir et al., 2018). According to Kristjansdottir et al. (2018) individuals with a chronic illness appreciated a social network that showed respect for the negative illness-related influences. This could mean that a mutual understanding between the chronically ill individual and for example family and friends might be essential for dealing with chronic illness-related factors.

Both personal strengths like kindness and a positive interpersonal network that respects chronic illnesses are closely intertwined with each other as well as with positive interpersonal relationships. There are different aspects that seemed to be important with respect to positive interpersonal relationships as strength and the experience of a chronic illness. For instance, the maintenance of social bonds with others was considered as crucial for experiencing a chronic illness (Fong et al., 2006). In line with this, Sturgeon and Zautra (2010) assumed that individuals with a chronic illness like chronic pain, who could sustain positive social connections, might have a greater level of adaption to this a chronic illness. Thus existing positive interpersonal relationships could be an important strength within the context of a chronic illness, both with regard to a positive and negative experience of the symptoms of the chronic illness. Positive interpersonal relationships were strengthening through intimacy and also facilitated resilience while confronted with the adversity of a chronic illness (Nygren et al., 2007). This could mean that positive intimate relationships contribute positively to resilience and the adaptation to a chronic illness like chronic pain. Other positive interpersonal relationships that might enhance the coping with a chronic illness were found within companionship. According to Kristjansdottir et al. (2018), companionship with others who also have a chronic illness decreased the feeling of being alone with a chronic illness. Thus, companionship could not only prevent loneliness due to a chronic illness, but companionship might also foster positive relationships with other chronically ill individuals.

Finally, the close connection between individual strengths that affected interpersonal relationships like kindness, the interpersonal network and interpersonal relationships might also describe strength through the development of new relationships with others. According to

Fong et al. (2006), both the experience of new interpersonal contacts and the forging of new social relationships contributed positively to the experience of a chronic illness. For this reason the development of new interpersonal relationships could also be viewed as strength.

In the light of the discussed literature about positive relationships with others as strength, this qualitative study examined positive interpersonal relationships as strength within the context of chronic pain. As there was still a gap between positive interpersonal relationships as strength and the experience of chronic pain, this exploratory qualitative study used semi-structured interviews for a more detailed experience of positive interpersonal relationships as strength within the context of chronic pain. In the interviews, the participants answered question that ermerged from the following interrelated research questions:

How do individuals with chronic pain view their positive interpersonal relationships as strength?

How do they use their positive interpersonal relationships as strength?

How can positive interpersonal relationships facilitate the coping with chronic pain?

Methods

Participants

Twelve German native-speakers with chronic pain were interviewed for this study. Eight women and four men participated in this study. The age of the participants varied between 38 years and 70 years with a mean age of 59.67 years.

There were different inclusion criteria for this study. First, individuals were included if they experienced positive relationships with others. This inclusion criterion was essential, as the study examined positive interpersonal relationships. Moreover, they should be able to speak and understand German fluently, as the interview was conducted in German. Finally, they should have chronic pain for more than a year, in order to accurately reflect about the influence that their positive relationships with others have on their chronic pain. Two participants mentioned difficult contact with others due to misunderstandings for their illnesses. Nevertheless, these participants reported different aspects about their positive interpersonal relationships as strength. Another participant pointed out to generally value distraction from her chronic pain, but also described this aspect within her positive relationships as strength along with other aspects of her positive interpersonal relationships. For this reason, these participants were not excluded from this study.

The time that the interview-partners lived with chronic pain varied from 3 or 4 years to 43 years. The mean time living with chronic pain was 19.36 years. One participant mentioned an unknown time of living with chronic pain that already lasted decades. While some of the participants reported that they did not have comorbidities, there were also many participants who mentioned different comorbidities next to their chronic pain. Examples of comorbidity were: Parkinson, arthritis, depression, asthma or skeleton problems due to the chronic pain. With regard to the comorbidities it might be possible that some comorbidities triggered chronic pain, whereas others were influenced by chronic pain. The different characteristics of the participants were described in table 1.

Table 1: Characteristics of the participants

Gender	Age	Nationality	Lifetime with	Comorbidities
			chronic pain	
Female	66 years	German	3 - 4 years	Yes
Female	50 years	German	11 years	Yes
Male	61 years	German	13 years	No
Female	65 years	German	Exact lifetime	Yes
			unknown, but	
			for decades	
Male	69 years	German	5 years	Yes
Male	70 years	German	40 years	Yes
Female	57 years	German	30 years	Yes
Female	66 years	German	30 years	Yes
Female	56 years	German	43 years	Yes
Male	63 years	German	20 years	No
Female	38 years	German	7 years	No
Female	55 years	German	10 years	Yes

Interview

In this study a semi-structured interview with open-ended questions was used due to exploration of the participants' experiences regarding to their positive interpersonal relationships as strength. Semi-structured interviews enabled the examination of sensitive topics (Barriball, & While, 1994) like the topic of this study. Different interview questions emerged from the research questions of this study. After a pilot interview, the interview questions were adjusted to smoothen the interview process for both the participants and the researcher. Also different prompts like "You said that.... Would you tell me more about this?" or "Could you tell me more about this?" were used for a more detailed insight in the participants' experience of positive interpersonal relationships as strength. A shortened interview guide with one example question for each research question was shown in table 2 and the complete interview guide with translations, was integrated in the German interview scheme and attached in Appendix 1.

Table 2: Interview guide

Research questions	Interview questions	Translated interview questions in German
	Introduction question: How would you describe your relationships with others? (e.g. friendly, familiar intimate)	Einleitungsfrage: Wie würden Sie ihre Beziehungen mit anderen Personen beschreiben? (z.B. freundlich, nahestehend, intim)
How do individuals with chronic pain view their positive interpersonal relationships as strength?	Which strengths do you derive from your positive relationships with others? (e.g. cohesion, support, happiness)	Welche Stärken können Sie aus Ihren positiven Beziehungen mit anderen ziehen? (z.B. Zusammenhalt, Rückhalt, Fröhlichkeit)
How do they use their positive interpersonal relationships as strength?	How can you influence your chronic illness for good on the basis of friendly and familiar relationships? →if necessary, as explanation: Which aspects of your relationships are helpful for you? (examples: kindness, clossness, understanding)	Wie können Sie anhand Ihrer freundschaftlichen und familiären Beziehungen Ihre chronische Erkrankung zum Guten beeinflussen? → falls notwendig, zur Erklärung: Welche Aspekte ihrer Beziehungen mit anderen helfen Ihnen? (z.B. Freundlichkeit, Nähe, Verständnis)
How can positive interpersonal relationships facilitate the coping with chronic pain?	What do you appreciate regarding to your relationships with others, in case of relieved symptoms? (e.g. drinking coffee together, nice conversations with family and friends)	Was schätzen Sie an ihren Beziehungen zu anderen, wenn die Symptome ihrer Erkrankung gerade nicht so ausgeprägt sind? (z.B. zusammen Kaffee trinken, nette Gespräche mit Familie und Freunden)

Procedure

The researcher approached participants through a purposive sampling from a chronic pain support group in Germany to ensure that participants shared the same characteristics, mentioned in the inclusion criteria, and that they could give detailed information about their positive interpersonal relationships as strength. The researcher explained participants about the study's purpose and method as well as voluntarily participation. Furthermore, the researcher asked them for permission to audio-record the interviews and ensured protection of confidentiality. Participants then received a written informed consent, attached in Appendix 2,

which also emphasized these aspects. Finally they handed in their signed informed consent. Before the start of the data collection, the Ethics Committee from the University of Twente checked the ethical considerations and approved this study with the request number 18370 on the 16th of April 2018. The interviews were conducted between the 24th of April and the 13th of June 2018.

Participants were interviewed either at their home or in a quite room at the support group's meeting point. The interviews lasted between nine and 28 minutes. Before interview-partners answered the questions related to positive interpersonal relationships as strength, they answered the introduction question: "How would you describe your relationships with others?". Thus, the researcher gained more insight into the relationships with others and could determine whether the participants had to be excluded from this study or not. In general, participants were open about their positive relationships with others.

Analysis

During the interview transcriptions, names and places were anonymized to protect the privacy of the participants. For the development of the coding scheme, the interview transcripts were read freely. Afterwards the researcher marked relevant fragments and made some notes within the interview transcripts by means of Microsoft Word. These notes served for the creation of potential codes. During the coding process, the fragments were translated into English. Therefore, the researcher attached the coding scheme, with illustrative quotes in Appendix 3 and the translation table of quotes in Appendix 4. Translations of illustrative coding examples were also mentioned at the end of Appendix 4. After the creation of potential codes, the researcher coded the first three interview transcripts. Based on these three interviews the potential codes were revised and the researcher added further codes to the coding scheme after she coded all interviews. The researcher analyzed the interviews through constant comparison, as the comparison within and between the interviews enabled the researcher to create different categories based on the data (Boeije, 2002). According to the step-by-step approach from Boeije (2002) to create different categories, the researcher first looked for comparisons and differences within interviews and afterwards between the interviews. When the researcher compared the interviews a deductive approach on the basis of the known literature and an inductive approach based on the answers of the interviewees were combined for the coding. However, this study emphasized the inductive approach as this approach enabled the researcher to create codes that emerged from the data (Thomas, 2006), thus the

answers from the interview-partners, which was recommended due to less prior knowledge about positive interpersonal relationships as strength within the context of chronic pain.

Participants reflected sometimes aspects of their positive interpersonal relationship as strength interrelated to the research questions. Consequently the codes were equally applied to the three research questions. The units for the coding varied between fragments, sentences and phrases. Regarding to the application of codes, the analyzed units of the interviews were coded with one code and took also connections with other codes into account, which underlined the meaning of the coding units. Accordingly, the researcher selected citations from the interviews that described the different meanings of the created codes. The fragments below illustrated the coding process.

"But where I think, with whom you are on the same wavelength. You can also talk with him about this or that." (Participant 8)

The researcher coded this fragment with *belongingness through positive relationships with others* and noted down mutual sympathy, closeness and understanding, as the participant appreciated these through belongingness reflected aspects.

A second fragment below described an interrelation between the main code and other codes. The main code of this fragment was *others accepting oneself and the chronic pain*, as his sons understood the impact of chronic pain. Moreover, this fragment was connected with *positive relations with others as source of courage/empathy/cohesion and support*, as the one son to whom he referred, demonstrated empathy towards his father. There was also a link with *positive relations with others to engage in activities*, as this participant involved himself in activities with his sons, if capable for him, due to the positive interpersonal relationship.

"My both sons, when I then... one is visting me, (...) and it doesn't work out anymore with my pain, then it's not bad for him that I go home then immediately or so (...) And then, I get myself involved in thing with them, if it is within my capabilities" (Participant 3)

Results

This study examined positive interpersonal relationships as strength within the context of chronic pain through the following three interrelated research questions: How do individuals with chronic pain view their positive interpersonal relationships as strength? How do they use their positive interpersonal relationships as strength? How can positive interpersonal relationships facilitate the coping with chronic pain?

To provide answers for these research questions the participants in this study described various experiences of their positive interpersonal relationships as strength: Some of them talked in general about their positive interpersonal relationships as strength, whereas others specificly described their positive relationships with family and friends. Sometimes participants mentioned difficulties with their interpersonal relationships due to chronic pain or other illnesses. Nevertheless, they described meaningful aspects of their positive interpersonal relationships as strength. Further, many parcipants stated to withdraw themselves in case of worst symptoms, but also described engagements in their positive interpersonal relationships during relieved symptoms. Finally, many participants also stated that despite worse symptoms, they were still fully involved in their positive relationships with others. Figure 1 illustrated how individuals with chronic pain view their positive interpersonal relationships as strength. These aspects were also interrelated with the use of such relationships as strength and how such relationships can facilitate the coping with chronic pain.

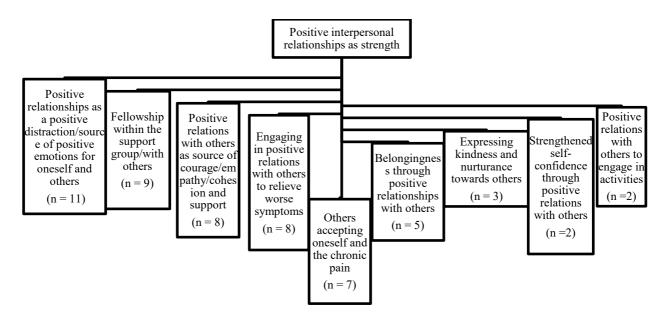


Figure 1: Positive interpersonal relationships as strength

Positive relationships as a positive distraction/source of positive emotions for oneself and others

The participants exhibited this aspect for example through engaging in conversations or spending time with friends for activities. Due to this the positive distraction, participants reflected that the pain was gone respectively relieved and they were fully involved in their positive relationships with others. Positive interpersonal relationships as distraction were often also a source for the experience of *positive emotions for oneself and others*. One participant stated after the interview question "What do you appreciate regarding to your relationships with others, in case of relieved symptoms?":

"Yes that I'm able to participate in something. Like with my friend, she has four dogs. And then we took a walk. (...) And then I get other thoughts, too. Then we talk about much things." (Participant 1)

Another participant mentioned the link between *positive relationships with others as a positive distraction* and *as source of positive emotions for oneself and others*. He reflected about the contact with his granddaughter, when he answered the interview question "How can you influence your chronic illness for the better on the basis of friendly and familiar relationships?":

"By having more joy in life. The best example is my little granddaughter, when she comes out the kindergarten in the afternoon and her grandpa is there, it's always a great joy. This influences me a lot on a personal level. I do not think anymore: >back here, back there. < Or knee, something. Instead I say: >You are there for the child< and you are pleased, when you give her something or when it's lunch." (Participant 10)

A further participant mentioned his engagement in political activities in his hometown. He explained that the conversations with his fellow members could totally distract him from his chronic pain:

"(...) I'm now also active otherwise also in (...) like in a political framework. And there it's the case then that I—, when I sit there my pain is gone. In this case they are also out of my head, as due to the conversation with the others then we come to talk to political topics here." (Participant 3)

Also encounters with strangers served as distraction from the chronic pain *and source of positive emotions for oneself and others*, like a participant stated after the question: "What do you appreciate regarding to your relationships with others, in case of relieved symptoms? (e.g. drinking coffee together, nice conversations with family and friends)"

"So we do it regularly, now my wife and me that we somewhere drink coffee. Then there are also people we don't know close. But then you are happy then and say hello (...)" (Participant 5)

Another participant mentioned how meaningful conversations with others were for him. He also linked these conversations with others to positive emotions. When he answered the question "What do you appreciate regarding to your relationships with others, in case of relieved symptoms? (e.g. drinking coffee together, nice conversations with family and friends)", he stated:

"Nice conversations with the family and with others. (...) Talking. Having fun. I mean, fun is important. Usually I'm a fun-maker." (Participant 6)

Finally, positive relationships with others seemed to distract from the pain even in case of worse symptoms. One participant replied to the question "And what do you appreciate regarding to your relationships with others if the symptoms of your illness are worse? (e.g. gratefulness for support, laughing together, nice conversations with family and friends)":

"When I feel bad, people can, yes, distract me again." (Participant 12)

Fellowship within the support group/with others

This aspect was related to both the support group and to other persons. Participants mentioned different facets of their *fellowship within the support group*. For example they reported similarities with fellow support group members and understanding for each other. Another facet was laughing together, which indicated a connection with *positive relationships as a positive distraction/source of positive emotions for oneself and others*. For example, one participant stated after the question "Which strengths do you derive from your positive relationships with others? (e.g. cohesion, support, happiness)":

"Sometimes it is happiness, when I notice through conversations within the support group that I, yes, being understood on the one hand, which is not really the case somewhere else. And that I have the feeling there as I, as I'm among like-minded people, then fun is on." (Participant 3)

Another participant, who was interviewed during a support group meeting, also mentioned this link between these aspects. She further noticed the possibility to talk about the pain. When she replied to the question "Which strengths do you derive from your positive relationships with others?", she took the examples of cohesion, support and happiness into account and stated:

"Everything. But not in general. Not the whole day along. Like now, then we laughed and did things together. Everything fine. And you come to other thoughts. You can also talk about the pain." (Participant 8)

Furthermore, one participant mentioned that he is able to disclose himself about different topics within the support group, which he cannot do with others, which described another facet of *fellowship within the support group/ with others*.

"Above all I see it positively within the support group, as you (...) you can unburden your heart there. Which you cannot do anywhere else. You can be open: That's it. Which you cannot say among many other people and which you wouldn't say among other people."

(Participant 5)

Participant 11 described the possibility to influence each other within the support group in order to deal with the chronic pain through the fellowship. In this way she revealed a further aspect of *fellowship within the support group/with others*, as she explained:

"Apart from that this support group is also important, because they are all people, who've experienced the same. (...) And we all can understand each other among us, how are you, and you look at the others and you know: Ok, today they have a bad day or a good day. And in this way you can appeal to them. Which is important, too, then, as like I said, nobody is laughing about you or gives you a crooked look, as everyone is in the same boat."

(Participant 11)

Finally, one participant mentioned the aspect of fellowship not only within the support group but also when he recognized that others are in a similar situation with a chronic illness:

"And some things are also in coversation when I notice that I'm not alone, that others maybe have the same or something similar." (Participant 3)

Positive relations with others as source of courage/empathy/cohesion and support

The participants reported their positive relationships with others as a source for various aspects. Some participants mentioned to gain courage through their positive relationships. Other participants stated to receive empathy respectively support and cohesion from their positive relationships with family and friends. These reported aspects were intertwined with each other. While she answered the question "How do your relationships with others help you to recognize positive aspects despite your chronic illness? (e.g. cohesion, support)", one participant explained:

"Yes the support is insofar very import that you -I just say, when you have pain on that day and you are together with others, who are positive towards me that they support me and say: >Come on, it's just an half hour<, this supports. That's..., I would gain strength through that." (Participant 9)

Another woman mentioned to meet friends and a membership within different groups related to different activities. Her statement described also a link between social activities and *positive relationships with others as source of courage/empathy/cohesion and support*. When she was given examples like drinking coffee together or having nice conversations with family and friends for the question "What do you appreciate regarding to your relationships with others, in case of relieved symptoms?" she explained:

"Yes. I just think that's very good and this does me good, too. I do this, too. I still meet my school friends on a regular basis. I'm in a gymnastics group. Then I have a small women's group, where we met each other or visit each other regularly. This psyches someone up." (Participant 4)

A further participant described how she gained courage through her positive relationships with others while spending time with others or talking with others. When she answered to the

question "Which strengths do you derive from your positive relationships with others? (e.g. cohesion, support, happiness)", she explained:

"So, for example that others bolster me. That I can spend a great time with them. So, when you talk with each other and so." (Participant 1)

Engaging in positive relations with others to relieve worse symptoms

Positive relationships with others relieved worse symptoms of chronic pain. Some participants stated that they felt relieved respectively no pain when they were spending time with others. For example, a participant mentioned during his answer to the question "How do your relationships with others help you to recognize positive aspects despite your chronic illness? (e.g. cohesion, support)" that meeting new people relieved his symptoms:

"This helps me insofar that due to my relations with others I'm active. And being active means for me that there is still hope that I might somehow experience relieve through conversations or through people who I meet (...)" (Participant 3)

Engaging in their positive relationships to relieve worse symptoms also continued to have a positive effect on the chronic pain, even if the spent time with others has already passed. A participant explained this, after she mentioned a withdrawal, but then she thought about spent time with a friend despite worse symptoms and mentioned a link with *positive relationships* as a positive distraction/source of positive emotions for oneself and others:

"No, with one friend, we talk (...). And then we can also laugh together. And then (...), it also fades in the background. Also when we meet ach other, I think in the morning: Oh man, somehow you're not fine today. And then we meet mostly somewhere outside at the café, we drink a coffee. And then it's gone for now. And this continues to have an effect. This is not only during the time you are together. This is also afterwards, there it continues to have an effect." (Participant 1)

Another participant described how the engagement in positive interpersonal relationships facilitated dealing with chronic pain and also relieved the chronic pain symptoms, which indicated connections with the aspects *positive relations with others as source of*

courage/empathy/cohesion and support and fellowship within the support group/ with others:

"Yes, when you are alone you muse essentially more and due to this you feel worse.

And when you have much contact with your friends or so, then they pull out you of this. Not only friends, family, when you meet them regularly or do activities together." (Participant 11)

Others accepting oneself and the chronic pain

During the interviews some participants mentioned that it is both important and helpful for them, if others accepting them and also the chronic pain as illness. After the researcher asked the question "Which strengths do you derive from your positive relationships with others? (e.g. cohesion, support, happiness)", a woman described:

"Acceptance and the possibility to come to terms with your own stuff. The problems you have yourself with the illness or with the illnesses. That's for me the most important thing about these conversations with others." (Participant 7)

With regard to the acceptance, she explained further:

"The acceptance of other persons that this illness is there. That maybe you are feeling not so well on some days. That you just, yes, that this illness is accepted." (Participant 7)

Belongingness through positive relationships with others

Belongingness was a further strength of positive interpersonal relationships and was reflected in different ways. For example, while she replied to the question "How do your relationships with others help you to recognize positive aspects despite your chronic illness? (e.g. cohesion, support)", participant 1 described not being left alone due to her son, despite the distance as her son lived further away.

"I have my son (...) we have a very good relationship. Yes, and that gives crutch, (...) that I do not feel so alone. I can always have contact." (Participant 1)

Furthermore, this aspect seemed to be interrelated with *fellowship within the support group/* with others and also with positive relationships as a positive distraction/source of positive

emotions for oneself and others. When participant 4 answered the question "And what do you appreciate regarding to your relationships with others if the symptoms of your illness are worse? (e.g. gratefulness for support, laughing together, nice conversations with family and friends)", she explained:

"The feeling of not being alone. I appreciate that you have someone, with whom you are together. For activities. For conversations in particular." (Participant 4)

Expressing kindness and nurturance towards others

Three participants mentioned to *express kindness and nurturance towards others* despite their chronic pain. This indicated a link with both *positive relationships with others as source of courage/empathy/cohesion and support* in a reciprocal way, as they were there for others and *positive relationships as a positive distraction/source of positive emotions for oneself and others.* Thus, this strength described an individual strength within the context of positive interpersonal relationships, as illustrated with the statements from two participants. When they replied to the question "What do you appreciate regarding to your relationships with others, in case of relieved symptoms?", they explained:

"(...) nevertheless I am able to bolster others up." (Participant 1)

"Yes, also the cohesion of people. When my symptoms are relieved, I'm actually always someone who wants to support someone else. (...) I'm just glad, when I'm well then the other people do me also well and then I try to cheer them up." (Participant 2)

Strengthened self-confidence through positive relations with others

Two participants mentioned that they strengthen their self-confidence through their positive relationships with others. For example, participant 2 explained during the question "Which strengths do you derive from your positive relationships with others? (e.g. cohesion, support, happiness)" how her positive interpersonal relationships enabled her to strengthen: her self-confidence:

"Yes, I think you gain more self-confidence as you get along well with others or also making good conversations" (Participant 2)

Positive relations with others to engage in activities

Two participants also described how their positive interpersonal relationships enabled them to be active despite the pain. Participants thus indicated a connection with *others accepting oneself and the chronic pain*. For example, one participant explained after the question "How can you influence your chronic illness for the better on the basis of friendly and familiar relationships?" first in a short way and later concrete, how others motivated her through their honesty to engage in activities even if the chronic pain hurt:

"To influence for good. You can just bear it. (...) by surround yourself with persons, (...) who tell you honestly how you behave at the moment. And change this behavior. And you can just do it by having someone, who is honest towards you. And to be honest does not always mean: >I feel sorry for you.<, but also >now come on, move. I know it hurts. I know you don't feel well. But keep your head up. Look upwards. Look forward. Move.< Regardless whether mentally or physically. It does not matter actually." (Participant 7)

While she described *positive relations with others to engage in activities*, another participant mentioned to accomplish more despite chronic pain due to experience positive relationships with others. When she replied to the question "Can you tell me more about the aspects of positive relationships that are important for you?", she stated:

"I get the impression then that I'm able to accomplish more, as I also do thing were others say: >It's better if you don't do them. < But when they are positive towards me and say >Come on, I help you. < or so, then I'm also in another mood." (Participant 9)

Additionally few participants described a downside regarding to their positive social involvement with others and the experience of chronic pain. For example, one participant described his time with friends on a mother's day weekend, which was also coded with *positive relationships as a positive distraction/source of positive emotions for oneself and others*, as he gave a greater value to the time with his friends than to the downside. He said:

"And even this much hiking, there are always a few hiking-enthusiasts. I didn't feel well then in the evening, but despite that it was fun. And that's stuff, where you say: Nice that I did participate and were together with friends these three days." (Participant 10)

Although participants thought about their answers, some of them remained unsure and asked about wrong answers. The researcher told them that their experiences of their positive relationships with others were the essential aspect of the interview, so there were no wrong answers. Furthermore, some participants wanted to discuss important conclusions. For example, one participant realized:

"For me it was the case that I noticed how much the support group means to me. And yes, my two sons in this case. This is heavy, I think anyhow." (Participant 3)

Whereas another participant highlighted the importance of family and friends in order to deal with the chronic pain at the end of the interview:

"As I said, family and friends are the most important. That this support is there. And understanding, because I don't know how it would be sometimes, if it would not be this way." (Participant 11)

To sum up, participants described various aspects about the view of their positive interpersonal relationships as strength. They often reflected on positive relationships as a positive distraction/source of positive emotions for oneself and others and fellowship within the support group/with others as well as positive relations with others as source of courage/ empathy/cohesion and support. Further essential aspects were engaging in positive relations with others to relieve worse symptoms and others accepting oneself and the chronic pain. Participants also valued belongingness through positive relationships with others. Some of them also described an interrelation between individual strengths and interpersonal relationships like expressing kindness and nurturance towards others and a strengthened self-confidence through positive relations with others. Few participants described the aspect of positive relations with others to engage in activities, despite chronic pain. These aspects were also connected to the use of positive interpersonal relationships as strength and the coping with chronic pain. Moreover, aspects were often interrelated with each other and the participants mentioned nuanced meanings of the found aspects. Finally, participants reflected on their positive interpersonal relationships as strength during the presence of worse and relieved symptoms.

Discussion

It was the aim of this study to examine positive interpersonal relationships as strength within the context of chronic pain by answering the following interrelated research questions: How do individuals with chronic pain view their positive interpersonal relationships as strength? How do they use their positive interpersonal relationships as strength? How can positive interpersonal relationships facilitate the coping with chronic pain?

Findings

Participants reported different aspects that were interrelated to their view, use and coping possibilities for positive interpersonal relationships as strength. In this study, positive interpersonal relationships enhanced the participants' well-being and experience of chronic pain both during worse and relieved symptoms. The reported aspects showed consensus with prior research and expanded these findings. Additionally, this study also found new aspects.

For example, participants demonstrated *social resilience* defined by Cacioppo et al. (2011) and its characteristic aspects, when they engaged in and sustained their positive interpersonal relationships. Additionally, some of them mentioned the establishment of new positive interpersonal relationships. Moreover, the exhibition of kindness and nurturance through helping others reflected helpfulness, empathy and kindness as individual strengths as also found by Kristjansdottir et al. (2018). *Expressing kindness and nurturance towards others* was crucial and participants, who mentioned this aspect in the interviews as strength, often also indicated to experience positive emotions with others. Thereby the participants not only viewed and used this aspect as strength, but it also facilitated coping with chronic pain.

Further consensus with prior research concerned the findings from Nygren et al. (2007). To illustrate, some participants reflected on their close, intimate relationships with others when they talked about *belongingness through positive relations with others* and *positive relations with others as source of courage/empathy/cohesion and support*. They further described their positive interpersonal relationships as strength within the context of chronic pain. Nygren et al. (2007) also discussed caring relationships as strength during the adversity of a chronic illness. The participants in the current study emphasized their positive relationships with others for example, when they explained how these relationships facilitate the coping with chronic pain. Further, through their belongingness to others, the participants did not feel alone despite their chronic pain and were also involved in these relationships. This study also supported and complemented the engagement in social activities as strength

from Boman et al. (2015) as well as the assumption of Sturgeon and Zautra (2010) about social involvements that strengthen resilience. Some participants mentioned a political engagement or other social engagements despite their pain. Through such activities with others, these participants gained not only *positive emotions* or were *positively distracted* from their chronic pain symptoms, but they also experienced *courage, empathy, cohesion and support*. Thus they were able to cope with their symptoms. Positive relationships with others were crucial for the participants, regardless to worse or relieved pain symptoms.

Moreover, this study supported also the findings from Kristjansdottir et al. (2018) about a positive interpersonal network and companionship with others who have a chronic illness as strength. Some participants appreciated that *others accepting themselves and the chronic pain* within their networks as further strength of their positive interpersonal relationships. *Fellowship within the support group*, thus with other chronically ill individuals was also described by many participants. Additionally they mentioned or indicated *fellowship with others* and described nuanced meanings of such fellowship, which further supported and even seemed to expand the aspect of companionship with others. Besides this study appeared to have accordance with another assumption of Sturgeon and Zautra (2010), as the participants demonstrated resilience to their chronic pain because of the maintenance of their positive relationships with others, which seemingly strengthened their well-being and helped them to cope with their pain symptoms regardless of the heaviness from the pain.

There was also overlap with the findings from Fong et al. (2006) regarding to the experience of interpersonal relationships. The active engagement in existing positive interpersonal relationships contributed positively to the experience of chronic pain. Thus the participants seemed to exhibit the earlier discussed aspects of positive interpersonal relationships as strength within newly developed as well as existing relationships. Few participants also mentioned in the interviews the experience and establishment of new social contacts. Like their existing relationships, the experience of these new contacts with others appeared to faciliate the experience of chronic pain.

Finally, this study revealed some new aspects of positive interpersonal relationships as strength. For example some participants involved themselves into their *relationships with others to relieve their worse symptoms*. Other participants *strengthened their self-confidence through their positive interpersonal relationships*. Last but not least, a few participants discussed that they were able *to engage in activities despite their chronic pain through their positive relationships with others*, as others are positive towards them and support them.

These new aspects might expand the interrelation between individual strengths and positive

interpersonal relationships as strength. Further these aspects highlighted the meaning of positive relationships with others concerning their development, their involvement and maintenance in the light of both worse and relieved chronic pain symptoms. Thus, individuals with chronic pain as well as individuals with other chronic illnesses might be enabled to deal with their illnesses through their positive interpersonal relationships and to completely enjoy their existing and new relationships in defiance of the symptoms. Accordingly, these aspects might illustrate how individuals could possibly experience positive aspects like flourishing due to their positive interpersonal relationships despite chronic illnesses like chronic pain.

Strengths and limitations of this study

The researcher interviewed participants of this study individually. In this way, she was able to gain detailed experiences of positive interpersonal relationships as strength within the context of chronic pain.

However, an absent inter-rater reliability respectively consensus of the coding scheme might be a limitation of this study, as the coding scheme was created and applied by only one researcher. Also related to the fact that there was only one researcher might be a practical limitation, as only members from a support group in a small town were interviewed. Thus it remained unknown if members from other chronic pain support groups would mention the same found aspects or discuss further aspects. Thus, only members within the same chronic pain support group were interviewed. But this was not necessarily a limitation, as the participants discussed their positive interpersonal relationships within the support group as strength also regarding to the use and how this fellowship facilitated the coping. In comparison to individuals without a chronic pain support group, the participants from this study might have an additional possibility for positive interpersonal relationships as strength. A further limitation might be the influences of the researcher's own physical disabilities, both visible and invisible, due to personal experiences of positive interpersonal relationships as strength in this context. But after informing participants about her disabilities, they were often more open towards the researcher and interview questions due to mutual respect for each other.

Despite these possible limitations, this study gained a more detailed insight into positive interpersonal relationships as strength, whereby findings were consistent with prior research literature and broadened these aspects. Further, this study took different meanings of and relations between these findings into account. Eventually, this study also revealed new

aspects of this topic, which were not mentioned in prior research and considered connections between these new aspects and aspects from prior research.

Implications and suggestions for future research

As the researcher developed and applied the coding scheme of this study individually, it could be useful for future research to approach other researchers to achieve consensus respectively a sufficient inter-rater reliability of the coding. The examination of generalizability of the findings from this study within the context of other chronic illnesses and disabilities could be a further implication. Moreover, the development of positive interpersonal relationships as strength could also be further examined. Some aspects of positive interpersonal relationships could appear within both existing and new relationships. For example, companionship with others who also have a chronic illness might take place within the existing social network and could also create new interpersonal relations. Participation in social activities as mentioned earlier by Boman et al. (2015) could occur both within existing relationships and also forge new social ties with others. By examining positive interpersonal relationships as strength throughout the establishment of new and existing interpersonal relationships, the development of positive interpersonal relationships as strength over time could be explored. Essentially A last and essential aspect for new as well as existing positive relations with others might be the fortification of these social connections, as fostering of such relationships enhanced the chronic illness experience (Fong et al., 2006).

Finally, the results of this study about positive interpersonal relationships as strength and the theoretical implications could provide a more practical, social implication in terms of healthcare and psychological settings. Positive interpersonal relationships of individuals with a chronic illness, as well as connections with new people, could help them to deal with their illness since the onset and diagnosis of the illness. Thus, not only the health and well-being of individuals with chronic pain or other chronic illnesses could be improved, but also existing and newly formed positive interpersonal relationships as strength may be intensified.

Conclusion

This study gained a more detailed insight into positive relationships with others as strength within the context of chronic pain. Nine facets of positive interpersonal relationships emphasized these positive social ties as strength while dealing with the negative aspects of chronic pain and in the absence respectively relieve of chronic pain symptoms. Few participants described both existing relationships and new ralationships with others as

strength. Taken together, these findings about positive interpersonal relationships as strength could help to enhance the well-being and health despite a chronic illness like chronic pain.

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Appendix 1: Interview scheme

Hallo, ich bin Kira Jarosch. Zuerst einmal möchte ich mich bei Ihnen bedanken, dass Sie sich bereit erklärt haben, an diesem Interview teilzunehmen. Dieses Interview ist Teil meiner Masterarbeit meines Psychologie-Studiums an der Universität Twente in den Niederlanden. In der Studie für meine Masterarbeit geht es im Genaueren darum, wie Menschen mit einer chronischen Erkrankung ihre positive Beziehungen mit anderen – wie Familie, Freunde, Arbeitskollegen und Mitgliedern aus der Selbsthilfegruppe – dabei helfen, mit ihrer Erkrankung umzugehen.

Die Teilnahme an dem Interview ist freiwillig und kann jederzeit wieder abgebrochen werden. Wäre es für Sie in Ordnung, falls ich unser Interview aufzeichne? Denn ich muss es später noch ins Schriftliche übertragen. Das Interview wird vertraulich behandelt. So werden beispielsweise Namen und Orte, welche während des Interviews von Ihnen erwähnt werden, in der veröffentlichten Arbeit zum Schutz der Privatsphäre nicht genannt. Außerdem wird auch Ihr Name entsprechend vertraulich behandelt, um Ihre Privatsphäre zu gewährleisten. Ebenso werden auch Ihre Zitate bei der Veröffentlichung der Studie anonym behandelt falls Zitate von Ihnen bei der Veröffentlichung der Studie verwendet werden sollten.

Ich bin mir darüber im Klaren, dass es schwierig für Sie sein könnte, über Ihre Beziehungen zu anderen zu sprechen. Machen Sie sich darüber bitte keine Sorgen: Es geht nicht darum, negative Erfahrungen aus der Vergangenheit oder der Gegenwart hervorzuheben. Sondern es geht –wie eben schon erwähnt – darum, wie Ihnen Ihre Beziehungen mit anderen – Familie und Freunde, sowie Arbeitskollegen und Mitgliedern aus der Selbsthilfegruppe – bei ihrer Erkrankung helfen können. Fühlen Sie sich nicht unter Druck gesetzt und nehmen Sie sich bei den Interviewfragen ruhig so viel Zeit wie Sie möchten, um über Ihre Antworten nachzudenken.

Ist das alles soweit deutlich?

Wenn Ihnen das alles deutlich ist, dann würde ich jetzt mit der Aufnahme des Interviews beginnen.

Research questions	Interview questions	Translated interview
		questions in German
	Introduction question:	Einleitungsfrage:
	How would you describe	Wie würden Sie ihre
	your relationships with	Beziehungen mit anderen
	others?	Personen beschreiben?
	(e.g. friendly, familiar	(z.B. freundlich,
	intimate)	nahestehend, intim)
How do individuals with chronic pain view their	Which strengths do you derive from your positive	Welche Stärken können Sie aus Ihren positiven
positive interpersonal relationships as strength?	relationships with others? (e.g. cohesion, support,	Beziehungen mit anderen ziehen?
relationships as strongth.	happiness)	(z.B. Zusammenhalt,
		Rückhalt, Fröhlichkeit)

Can you tell me more about the aspects of positive relationships that are important for you? (e.g. friendliness, understanding, openness, fidelity) Können Sie mir mehr darüber sagen, welche Aspekte Ihnen für eine /an einer positive(n) Beziehung wichtig sind? (z.B. Freundlichkeit, Verständnis, Offenheit, Treue)

How do your relationships with others help you to recognize positive aspects despite your chronic illness? (e.g. cohesion, support)

Wie helfen Ihnen Ihre Beziehungen mit anderen dabei, dass Sie trotz ihrer chronischen Erkrankung das Positive sehen? (z.B. Zusammenhalt, Rückhalt)

How do they use their positive interpersonal relationships as strength?

How can you influence your chronic illness for good on the basis of friendly and familiar relationships? Wie können Sie anhand Ihrer freundschaftlichen und familiären Beziehungen Ihre chronische Erkrankung zum Guten beeinflussen?

→if necessary, as explanation:
Which aspects of your relationships are helpful for you? (examples: kindness, clossness, understanding)

→ falls notwendig, zur Erklärung: Welche Aspekte ihrer Beziehungen mit anderen helfen Ihnen? (z.B. Freundlichkeit, Nähe, Verständnis)

How can positive interpersonal relationships facilitate the coping with chronic pain?

What do you appreciate regarding to your relationships with others, in case of relieved symptoms? (e.g. drinking coffee together, nice conversations with family and friends)

Was schätzen Sie an ihren Beziehungen zu anderen, wenn die Symptome ihrer Erkrankung gerade nicht so ausgeprägt sind? (z.B. zusammen Kaffee trinken, nette Gespräche mit Familie und Freunden)

And what do you appreciate regarding to your relationships with others if the symptoms of your illness are worse? (e.g. gratefulness for the support, laughing together, nice conversations with family and friends)

Und was schätzen Sie an ihren Beziehungen, falls die Symptome ihrer Erkrankung an einem Tag stärker sind? (z.B. Dankbarkeit für die Unterstützung, zusammen lachen, nette Gespräche mit Familie und Freunden)

Nun habe ich noch ein paar allgemeine Fragen:

Wie alt sind Sie?

Ebenfalls würde ich gerne für die allgemeinen Angaben noch folgendes wissen wollen: Welches Geschlecht haben Sie?

→andernfalls selbst während der Aufnahme benennen beziehungsweise nach der Aufzeichnung des Interviews mit dem Teilnehmer besprechen – sofern der Teilnehmer es nicht selbst im Interview nennt

Wie lange haben Sie schon chronische Schmerzen?

Haben Sie noch andere chronische Erkrankungen?

Noch einmal vielen Dank für Ihre Teilnahme am Interview! Haben Sie noch Fragen oder Anmerkungen, die Sie mit mir besprechen möchten?

Wie blicken Sie auf dieses Interview zurück?

Wenn Sie Ihr Interview in Schriftform einsehen möchten und/oder eine Zusammenfassung der Studienergebnisse möchten, können Sie mir gerne eine Email schreiben. Falls Sie später noch Fragen oder Anmerkungen haben, können Sie mir auch dazu gerne eine Email schreiben.

Appendix 2: Informed consent

Einverständniserklärung

Titel der Studie: Positive zwischenmenschliche Beziehungen als Stärke im Kontext chronischer Schmerzen

Name der wissenschaftlichen Leiterin: Kira Jarosch

In dieser Studie geht es darum, wie die positiven und innigen Beziehungen mit anderen (zum Beispiel Familie, Freunde und Arbeitskollegen) als Stärke angesehen und als diese eingesetzt werden – um besser mit den chronischen Schmerzen umgehen zu können.

Hierzu würde ich Sie um ein Interview bitten, das ungefähr 30 bis 45 Minuten dauert. Sie können sich bei der Beantwortung der Fragen so viel Zeit nehmen, wie Sie möchten und in Ruhe über Ihre Antworten nachdenken. Da das Interview im Rahmen der Studie noch ins Schriftliche übertragen werden soll, wird das Interview aufgezeichnet. All die von Ihnen angegebenen Daten werden vertraulich behandelt und ohne ihre ausdrückliche Erlaubnis nicht an Dritte weitergegeben. Zum Beispiel werden Namen und Orte, die Sie nennen bei der Veröffentlichung der Studie zum Schutz der Privatsphäre vom wissenschaftlichen Leiter abgeändert.

Die Teilnahme ist freiwillig und kann jederzeit ohne die Angabe von Gründen wieder abgebrochen werden. Daraus entsteht auch kein Nachteil für den/die Teilnehmer/in.

Falls Sie noch nachträglich Fragen, Anregungen oder Anmerkungen äußern möchten können Sie mir eine Email schicken.

Hiermit versichert der Teilnehmer, dass er ausreichend Zielsetzung der Studie informiert wurde.	l über die Art, die Methode und die
Datum, Unterschrift des Teilnehmers	
Hiermit versichert die wissenschaftliche Leiterin, dass Art, die Methode und die Zielsetzung der Studie inforr	
Datum, Unterschrift des wissenschaftlichen Leiters	

Appendix 3: Coding scheme

				_
Research	Codes	Codes 2nd level	Quotation examples	Remarks
questions How do individuals with chronic pain view their positive interpersonal relationships as strength?	Positive interpersonal relationships as strength	Positive relationships with others as source of courage/ empathy/ cohesion and support	Participant 1: "So, for example that others bolster me. That I can spend a great time with them. So, when you talk with each other and so."	General remark: The described aspects were often intertwined with each other and among the research questions This code was mentioned by different participants; seemingly linked with expressing kindness and nurturance towards others
		Engaging in positive relationships to relieve worse symptoms	Participant 3: "() I'm now also active otherwise also in () like in a political framework. And there it's the case then that I –, when I sit there my pain is gone. In this case they are also out of my head, as due to the conversation with the others then we come to talk to political topics here."	
		Belongingness through positive relationships	Participant 1: "I have my son () we have a very good relationship. Yes, and that gives crutch, () that I do not feel so alone. I can always have contact."	Belongingness with others was also a common theme

Strengthened self-confidence through the engagement in positive relationships

Participant 2: "Yes, I think you gain more self-confidence as you get along well with others or also making good conversations" Rarely mentioned, but it still seemed to be important for the participants who mentioned this aspect

Others accepting oneself and the chronic pain

Participant 2: "So positive relationship is important for me that I can talk with others about everything. That he tells me also about my negative aspects"

Acceptance from others was important for both oneself and the chronic pain; related to the view, use and coping possibilities; This aspect was linked with *positive* relationships with others as source of courage/ empathy/ cohesion and support

Fellowship within the support group/with others

Participant 3:
"Sometimes it is happiness, when I notice through conversations within the support group that I, yes, being understood on the one hand, which is not really the case somewhere else. And that I have the feeling there as I, as I'm among like-minded people, then fun is on."

Participants described different meanings of this aspect and also connected it with other aspects

	Positive relations with others to engage in activities	Participant 9: "I get the impression then that I'm able to accomplish more, as I also do thing were others say: >It's better if you don't do them.< But when they are positive towards me and say >Come on, I help you. < or so, then I'm also in another mood."	Two participants mentioned this aspect. It might be thus not so important. However, it was still an important strength for these participants
How do they use their positive interpersonal relationships	Expressing kindness and nurturance towards others	"That I'm very helpful, also towards other people" (Participant 10)	This aspect was linked with two other aspects
as strength?	Positive relationships as a positive distraction/ source of positive emotions for oneself and others	Participant 1: "() others do not know how someone feels who has always pain. (), nevertheless I'm still able to find a positive word. Also talking to someone and say something nice to him, so that he is happy"	This aspect was used as strength and helped participants to cope with their pain; also linked with Expressing kindness and nurturance towards others
	Positive relations with others to engage in activities	Participant 7: "() maybe also this famous kick in the buttom. Move. Do it. Say, when you need something. Don't swallow everything. Actually more motivating ()"	
How can positive interpersonal relationships facilitate the coping with chronic pain?	Positive relationships as a positive distraction/source of positive emotions for oneself and others	Participant 1: "Yes that I'm able to participate in something. Like with my friend, she has four dogs. And then we took a walk. () And then I get other thoughts, too. Then we talk about much things."	

Expressing kindness and nurturance for others

Participant 2: "Yes, also the cohesion of people. When my symptoms are relieved, I'm actually always someone who wants to support someone else. (...) I'm just glad, when I'm fine then the other people do me also well and then I try to cheer them up."

Others accepting oneself and the chronic pain

Participant 3: "My both sons, (...) one is visting me, (...) and it doesn't work out anymore with my pain, then it's not bad for him that I go home then immediately or so (...), I get myself involved in things with them, if it is within my capabilities"

This aspect
was linked
with positive
relationships
with others as
source of
courage/
empathy/
cohesion and
support

Fellowship within the support group/with others

Participant 11:"Apart from that this support group is also important, because they are all people, who've experienced the same. (...) And we all can understand each other among us, how are you, and you look at the others and you know: Ok, today they have a bad day or a good day. And in this way you can appeal to them. Which is important, too, then, as like I said, nobody is laughing about you or gives you a crooked look, as everyone is in the same boat."

Appendix 4: Translation table of quotes

Original quotes in German

"Ja, dass ich einfach irgendwas mitmachen kann. Wie mit meiner Freundin, die hat vier Hunde. Und dann sind wir spazieren gegangen (...) Und dann komme ich auch auf andere Gedanken. Dann reden wir über viele Sachen." (Participant 1)

"Indem ich mehr Freude habe am Leben. Beste Beispiel ist meine kleine Enkeltochter, wenn die nachmittags aus'm Kindergarten kommt und ihr Opi ist da, ist immer große Freude. Das beeinflusst mich reinpersönlich sehr. Ich denke auch nicht mehr an >Rücken hier, Rücken da< oder Knie, irgendwas. Sondern ich sage: >Du bist für das Kind da< und man freut sich, wenn man ihr etwas gibt oder wenn das Mittagessen ist." (Participant 10)

"(...) ich bin ja nun auch anderswertig aktiv auch in (...) so im politischen Rahmen. Und da ist es dann halt so, dass ich—, wenn ich dort dann sitze meine Schmerzen sind weg. Also, die sind auch aus dem Kopf in dem Fall, weil ich halt durch das Gespräch mit den anderen da kommen eben auf politische Themen hier zu sprechen, so." (Participant 3)

"Also wir machen's regelmäßig, jetzt meine Frau und ich, dass wir irgendwo Kaffee trinken gehen. Da sind dann auch Leute dabei, die wir nicht näher kennen. Aber man freut sich dann und sagt hallo (...)" (Particfipant 5)

"Nette Gespräche mit der Familie und auch so anderen Leuten. (...) Reden. Spaß haben. Ich meine, Spaß ist wichtig. Ich bin ein Spaßvogel normal." (Participant 6)

"Wenn es mir schlecht geht, die Leute können mich dann auch wieder, ja, ablenken." (Participant 12)

Translated quotes in English

"Yes that I'm able to participate in something. Like with my friend, she has four dogs. And then we took a walk. (...) And then I get other thoughts, too. Then we talk about much things." (Participant 1)

"By having more joy in life. The best example is my little granddaughter, when she comes out the kindergarten in the afternoon and her grandpa is there, it's always a great joy. This influences me a lot on a personal level. I do not think anymore: >back here, back there.< Or knee, something. Instead I say: >You are there for the child< and you are pleased, when you give her something or when it's lunch." (Participant 10)

"(...) I'm now also active otherwise also in (...) like in a political framework. And there it's the case then that I –, when I sit there my pain is gone. In this case they are also out of my head, as due to the conversation with the others then we come to talk to political topics here." (Participant 3)

"So we do it regularly, now my wife and me that we somewhere drink coffee. Then there are also people we don't know close. But then you are happy then and say hello (...)" (Participant 5)

"Nice conversations with the family and with others. (...) Talking. Having fun. I mean, fun is important. Usually I'm a fun-maker." (Participant 6)

"When I feel bad, people can, yes, distract me again." (Participant 12)

"Fröhlichkeit ist es halt manchmal, wenn ich dann gerade in Gesprächen in der Selbsthilfegruppe merke, dass ich, ja, einerseits verstanden werde, was woanders nicht so der Fall ist. Und dass ich eben halt da das Gefühl habe, dadurch dass ich, dass ich unter Gleichgesinnten bin dann kommt schon mal Spaß auf" (Participant 3) "Sometimes it is happiness, when I notice through conversations within the support group that I, yes, being understood on the one hand, which is not really the case somewhere else. And that I have the feeling there as I, as I'm among like-minded people, then fun is on." (Participant 3)

"Alles. Aber nicht generell. Sprich nicht von morgen bis abends. Sondern jetzt, dann haben wir gelacht, gemacht, getan. Alles gut. Und man kommt auf andere Gedanken. Man kann auch mal über Schmerzen reden." (Participant 8) "Everything. But not in general. Not the whole day along. Like now, then we laughed and did things together. Everything fine. And you come to other thoughts. You can also talk about the pain." (Participant 8)

"Also vor allen Dingen bei der Selbsthilfegruppe sehe ich das positiv, weil man (...) kann da dann auch mal sein Herz ausschütten. Was man woanders nicht kann. Man kann dann einfach offen sein: So ist es. Was man bei vielen anderen nicht sagen kann und nicht sagen würde." (Participant 5) "Above all I see it positively within the support group, as you (...) you can unburden your heart there. Which you cannot do anywhere else. You can be open: That's it. Which you cannot say among many other people and which you wouldn't say among other people." (Participant 5)

Und manches ist ja im Gespräch dann auch, wenn ich merke, dass ich da nicht mit alleine stehe, das andere das Gleiche haben, vielleicht –oder was ähnliches. (Participant 3)

"And some things are also in coversation when I notice that I'm not alone, that others maybe have the same or something similar." (Participant 3)

"Ansonsten ist auch diese Selbsthilfegruppe ja auch wichtig, weil's alles Leute sind, die dasselbe durchgemacht haben. (...) Und wir alle können untereinander aber verstehen, wie geht es ihm, und man sieht die Leute dann nur an und weiß: Ok, heute haben sie einen schlechten Tag oder einen guten Tag. Und so kann man dann auch auf die dann einwirken. Was auch wichtig dann ist, weil wie gesagt hier lacht einen keiner aus oder guckt einen schief an, weil halt alle im selben Boot sitzen." (Participant 11)

"Apart from that this support group is also important, because they are all people, who've experienced the same. (...) And we all can understand each other among us, how are you, and you look at the others and you know: Ok, today they have a bad day or a good day. And in this way you can appeal to them. Which is important, too, then, as like I said, nobody is laughing about you or gives you a crooked look, as everyone is in the same boat." (Participant 11)

"Ja, der Rückhalt, der ist insofern ganz wichtig, dass man – ich sag mal, wenn man jetzt an dem Tag Schmerzen hat – und man ist dann mit Menschen zusammen, die auch mir gegenüber positiv sind, dass sie mich unterstützen und sagen >Komm, es ist ja nur noch ne halbe Stunde< das unterstützt. Das ist..., also da würde ich die Kraft draus ziehen." (Participant 9)

"Yes the support is insofar very import that you – I just say, when you have pain on that day and you are together with others, who are positive towards me that they support me and say: >Come on, it's just an half hour<, this supports. That's..., I would gain strength through that." (Participant 9)

"Ja. Das finde ich eben sehr gut und das tut mir auch gut. So was mach ich auch. Regelmäßig treffe ich mich noch mit Schulfreundinnen. Ich bin dann inner Gymnastikgruppe. Dann habe ich ne kleine Frauengruppe, wo wir auch uns immer wieder treffen oder besuchen. Das baut einen auf." (Participant 4) "Yes. I just think that's very good and this does me good, too. I do this, too. I still meet my school friends on a regular basis. I'm in a gymnastics group. Then I have a small women's group, where we met each other or visit each other regularly. This psyches someone up." (Participant 4)

"Also, zum Beispiel, dass mir andere auch Mut machen. Dass ich mit denen eine schöne Zeit verbringen kann. Also wenn man sich unterhält und so." (Participant 1) "So, for example that others bolster me. That I can spend a great time with them. So, when you talk with each other and so." (Participant 1)

"Das hilft mir insofern dabei, dass durch die Beziehungen zu anderen bin ich aktiv. Und aktiv sein heißt für mich, immer noch ne Hoffnung zu haben, dass ich irgendwie durch Gespräche oder durch Menschen, die ich kennenlerne, vielleicht doch ne Linderung erfahre, (...)" (Participant 3) "This helps me insofar that due to my relations with others I'm active. And being active means for me that there is still hope that I might somehow experience relieve through conversations or through people who I meet (...)" (Participant 3)

"Nee, mit einer Freundin, wir erzählen (...). Und dann können wir auch gemeinsam lachen. Und dann ist das auch, tritt das auch in den Hintergrund. Auch wenn wir uns mal treffen, ich denke morgens: Oh man, irgendwie geht's dir heute nicht so gut. Und wir treffen uns dann meistens draußen irgendwo im Café, gehen wir nen Kaffee trinken. Und dann ist das weg erstmal. Und das wirkt auch noch nach. Das ist nicht nur während der Zeit, die man zusammen sitzt. Das ist auch hinterher, da wirkt das noch so nach." (Participant 1)

"No, with one friend, we talk (...). And then we can also laugh together. And then it's also, it also fades in the background. Also when we meet ach other, I think in the morning: Oh man, somehow you're not fine today. And then we meet mostly somewhere outside at the café, we drink a coffee. And then it's gone for now. And this continues to have an effect. This is not only during the time you are together. This is also afterwards, there it continues to have an effect." (Participant 1)

"Ja, wenn man alleine ist grübelt man halt wesentlich mehr und dann geht's einem halt dadurch dann auch schlechter. Und wenn man halt viel Kontakt zu seinen Freunden oder so hat, die ziehen einen da halt auch wieder raus. Nicht nur Freunde, Familie, wenn man sich regelmäßig mit denen trifft oder Sachen macht." (Participant 11)

"Yes, when you are alone you muse essentially more and due to this you feel worse. And when you have much contact with your friends or so, then they pull you of this. Not only friends, family, when you meet them regularly or do activities together." (Participant 11)

"Akzeptanz und die Möglichkeit, die eigenen Sachen zu verarbeiten. Die Probleme, die man selber mit der Krankheit oder mit den Krankheiten hat. Das ist für mich das Wichtigste aus diesen Gesprächen mit anderen." (Participant 7) "Acceptance and the possibility to come to terms with your own stuff. The problems you have yourself with the illness or with the illnesses. That's for me the most important thing about these canversations with others." (Participant 7)

"Die Akzeptanz von anderen Menschen, dass es diese Krankheit gibt. Dass man vielleicht mal an manchen Tagen nicht so richtig klasse drauf ist. Dass man einfach, ja, dass diese Krankheit akzeptiert wird." (Participant 7) "The acceptance of other persons that this illness is there. That maybe you are feeling not so well on some days. That you just, yes, that this illness is accepted." (Participant 7)

"Ich hab meinen Sohn (...) wir haben ein sehr gutes Verhältnis. Ja, und das gibt irgendwie Halt, (...) dass ich mich nicht so alleingelassen fühle. Ich kann immer Kontakt auch haben." (Participant 1) "I have my son (...) we have a very good relationship. Yes, and that gives crutch, (...) that I do not feel so alone. I can always have contact." (Participant 1)

"Das Gefühl nicht allein zu sein. Da schätze ich eben daran, dass man jemanden hat, mit dem man zusammen ist. Für Unternehmungen. Für Gespräche eben insbesondere." (Participant 4)

"The feeling of not being alone. I appreciate that you have someone, with whom you are together. For activities. For conversations in particular." (Participant 4)

"Ja, auch den Zusammenhalt der Menschen. Wenn meine Symptome nicht stark ausgeprägt sind, da bin ich eigentlich auch immer jemand, der jemand anders gern unterstützen möchte. (...) ich freu mich dann halt, wenn's mir gutgeht, dann tun mir auch die anderen Menschen gut und ich versuche sie dann zu trösten." (Participant 2)

"Yes, also the cohesion of people. When my symptoms are relieved, I'm actually always someone who wants to support someone else. (...) I'm just glad, when I'm well then the other people do me also well and then I try to cheer them up." (Participant 2)

"(...) ich kann trotzdem noch anderen Mut machen."

"(...) nevertheless I am able to bolster others up." (Participant 1)

"Ja, man wird selbstbewusster finde ich, dadurch dass man sich mit anderen Menschen gut klarkommt oder auch gut unterhält." (Participant 2) "Yes, I think you gain more self-confidence as you get along well with others or also making good conversations" (Participant 2) "Zum Guten beeinflussen. Man kann sie nur ertragen. (...) indem man mit Leuten sich umgibt, die einem (...) ehrlich sagen, wie man sich vielleicht gerade in dem Moment verhält. Und dieses Verhalten umschrauben kann. Und das kann man nur, indem derjenige, der gegenüber ehrlich mit einem ist. Und ehrlich heißt nicht immer nur >du tust mir leid<, sondern halt eben mal >jetzt komm, beweg deinen Hintern. Ich weiß es tut weh. Ich weiß, dir geht's nicht gut. Aber lass den Kopf nicht hängen. Guck nach oben. Guck nach vorne. Beweg dich.< Ob seelisch, geistig, oder körperlich. Ist eigentlich egal." (Participant 7)

"To influence for good. You can just bear it.
(...) by surround yourself with persons, (...) who tell you honestly how you behave at the moment. And change this behavior. And you can just do it by having someone, who is honest towards you. And to be honest does not always mean: >I feel sorry for you. <, but also >now come on, move. I know it hurts. I know you don't feel well. But keep your head up. Look upwards. Look forward.
Move. < Regardless whether mentally or physically. It does not matter actually.""
(Participant 7)

"Also ich hab dann eher den Eindruck, dass ich dann auch mehr leisten kann, weil ich mache dann auch Dinge, die andere vielleicht sagen >Na ja, mach sie lieber nicht.< Aber wenn die dann zu mir auch positiv sind oder sagen >Na, ich helf dir.< oder so, dann bin ich auch anders drauf." (Participant 9)

"I get the impression then that I'm able to accomplish more, as I also do thing were others say: >It's better if you don't do them.< But when they are positive towards me and say >Come on, I help you. < or so, then I'm also in another mood." (Participant 9)

"Und selbst das viele Wandern, da sind immer so ein paar Wanderbegeisterte bei. Es ging mir zwar abends dann nicht ganz so gut, aber es hat trotzdem Spaß gemacht. Und das sind so Sachen wo man sagt: Man gut, dass ich's doch mitgemacht habe und mit den Freunden diese drei Tage zusammen war." (Participant 10)

"And even this much hiking, there are always a few hiking-enthusiasts. I didn't feel well then in the evening, but despite that it was fun. And that's stuff, where you say: Nice that I did participate and were together with friends these three days." (Participant 10)

"Also für mich war's halt so, dass ich gemerkt habe, wie viel wert mir die Gruppe an und für sich dann doch ist. Und ja, und meine beiden Söhne in dem Fall. Das ist schon hart, fand ich jedenfalls." (Participant 3) "For me it was the case that I noticed how much the support group means to me. And yes, my two sons in this case. This is heavy, I thought anyhow." (Participant 3)

"Wie gesagt, Familie und Freunde sind halt das Wichtigste. Das dieser Rückhalt da ist. Und Verständnis, weil weiß ich nicht wie es manchmal dann wäre, wenn es nicht so wäre." (Participant 11) "As I said, family and friends are the most important. That this support is there. And understanding, because I don't know how it would be sometimes, if it would not be this way." (Participant 11)

"() vielleicht auch mal dieser berühmte
Tritt in den Hintern. Beweg dich. Mach. Sag,
wenn was ist. Schluck nicht alles runter.
Eigentlich mehr anschubsen () (Participant
7)

"(...) maybe also this famous kick in the buttom. Move. Do it. Say, when you need something. Don't swallow everything. Actually more motivating(...)" (Participant 7)

"Ich sehr hilfsbereit bin, auch anderen Leuten gegenüber." (Participant 10) "I'm very helpful, also towards other people." (Participant 10)

"Aber wo ich denke, mit dem bist du auf einer Wellenlänge. Mit dem kannst du auch mal über dieses oder jenes reden." (Participant 8) "But where I think, with whom you are on the same wavelength. You can also talk with him about this or that." (Participant 8)

"Meine beiden Söhne, wenn ich dann, einer mich besucht,(...) und es geht nicht mehr mit meinen Schmerzen, dann ist es halt für ihn nicht schlimm, dass ich dann auch gleich wieder nach Hause fahre oder so.(...) Und dann, ich lass mich halt bei den beiden noch auf Sachen ein, wenn es denn im Rahmen meiner Möglichkeiten ist" (Participant 3)

"My both sons, when I then... one is visting me, (...) and it doesn't work out anymore with my pain, then it's not bad for him that I go home then immediately or so (...) And then, I get myself involved in thing with them, if it is within my capabilities" (Participant 3)