# Chapter 7

# **Chronic Pain and Interpersonal Processes:**

## A need-based approach

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#### Abstract

In this chapter, the authors argue that one particular type of a caregiver's behavioral response to pain cannot, in and of itself, be considered adaptive or maladaptive. They contend that to understand the complexity of the interaction between caregivers and pain sufferers, a goal or need-based framework may be useful. Self-Determination Theory (SDT) will be presented as a heuristic framework that identifies three basic psychological needs as essential for successful adaption. Whether behavioral responses are supportive/helpful, depends upon the extent to which these responses support the need for autonomy, competence and relatedness of the sufferer. Drawing on an affective-motivational account on interpersonal dynamics in the context of pain, the authors highlight how observer attunement towards sufferers' needs may depend upon the regulation of various goals for caregiving including self-versus other-oriented goals and associated emotions.

## Keywords

Helping behavior, beneficial support provision, basic psychological needs, caregiving motivation, self-determination theory, goals, emotion regulation

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#### 1. Introduction

Pain typically takes place within an interpersonal context. For instance, the spouse of a patient suffering from chronic pain may be worried and overprotective in order to prevent further harm to his/her loved one. Another spouse might react indifferently or display negativity. We can well imagine that these two responses may have different effects on the well-being of the patient. Several attempts have been undertaken to categorize responses of others in terms of their *expected* impact upon the sufferer's pain experience and behavior. Traditional conceptualizations have distinguished between responses that are helpful or beneficial, and responses that are non-supportive or even detrimental. The operant framework in the context of pain, originally formulated by Fordyce (1976), has received most attention in this regard, and continues to influence pain literature and clinical intervention (Main et al., 2015). Although the operant framework has advanced the field by acknowledging the critical role of observer behavior (e.g., reward and/or punishment) in understanding pain outcomes, it has become increasingly clear that it falls short in capturing the nuances and the complexity of interpersonal dynamics in the context of pain. Most problematic is that the majority of studies on the impact of observer behavior are based on a priori expectations of the reinforcement value of observer responses.

Accumulating research suggests that one particular type of behavioral response cannot, in and of itself, be considered adaptive or maladaptive (e.g., Bolger & Eckenrode, 1991; Bolger, Foster, Vinokur, & Ng, 1996; Bolger, Zuckerman, & Kessler, 2000). A priori categorizations about beneficial or detrimental qualities of behavioral responses under-represent the complexity of the interaction between observers and co-actors and pain sufferers. For instance, solicitous responses, such as providing reassurance or taking over household chores (Kerns, Turk, & Rudy, 1985), are expected to increase pain behaviors; yet, evidence has shown that this is not always the case and these types of support behaviors do not always reinforce pain behaviors (Newton-John, 2002). In this chapter, we argue that goal or needbased approaches provide a valuable explanation for the mixed findings on the effects of caregiving responses on individuals' pain experience and behavior. In this endeavor, we will draw on the social support literature, Self-Determination Theory (SDT, Deci & Ryan, 2000), and an affective-motivational account on interpersonal dynamics in the context of pain (Vervoort & Trost, 2017). The basic tenet is that understanding the actual consequences of observer behavioral responses depends upon the extent to which these responses are supportive of *the goals or needs of the person in pain*.

#### 2. Pain as an interpersonal experience

Although pain is a personal experience, it is rarely entirely private in nature. The sufferer's voluntary (i.e., purposeful) and involuntary (i.e., reflexive) behaviors communicate pain and associated distress to others, and may elicit emotional and caregiving responses from others, which, in turn, can affect the sufferer's pain experience and expression (Hadjistavropoulos et al., 2011). This dialectic interplay between the sufferer and the social environment has been articulated within various heuristic frameworks (Goubert et al., 2005; Hadjistavropoulos et al., 2011). We briefly discuss these frameworks.

#### 2.1 Heuristic frameworks

The *communications model of pain* (Hadjistavropoulos et al., 2011) is based upon Rosenthal's (1982) communication model and delineates how observers decode and react to the psychological states and behaviors of others. This model encompasses both non-verbal (e.g., facial expressions) and verbal (e.g., talking about pain) modes of communications of pain. In line with Rosenthal's descriptions, the process of communication is described as a three-step sequence (see Figure 7.1), and directs attention to the dynamics and complexity of the information transmission process between those suffering from pain and observers. The sequence typically is initiated by a painful stimulus or tissue damage, which may lead to the internal experience of pain (Step A), and the subsequent encoding in expressive behavior (Step B). These expressions of individuals in pain may then be decoded (Step C) by the observer, allowing him or her to make inferences about the experience of the sender (i.e., the person in pain). In turn, the actions or responses of the observer can exert an impact upon processes in Step A and processes in Step B.

The *empathy model of pain* (Goubert et al., 2005; Goubert, Vervoort, & Craig, 2013) refines the *various* observer responses that may occur when the observer is faced with another in pain. This model (see Figure 7.1) brings to the fore the capacity of observers to empathize with another person in pain. The model distinguishes cognitive, affective and behavioral empathic responses that are, although distinct, closely related to each other. Observer *cognitive* responses are broadly defined as "a sense of knowing the experience of the other" (p. 287; Goubert et al., 2005), reflecting the observers' estimates of sufferer's pain). *Affective* responses refer to the feelings that arise when being faced with another in pain (e.g., feelings of sympathy or distress). Accumulating evidence suggests that facing others in pain often elicits affective distress in observers (Craig, 1968; De Ruddere, Goubert, Vervoort, Prkachin, & Crombez, 2012). Finally, *behavioral* responses refer to actual caregiving responses which may vary widely and include observer actions that are expected to diminish pain and suffering (e.g., provision of pain medication) as well as behavioral responses that are expected to perpetuate sufferer's pain and distress (e.g., displays of irritation and criticism).

#### 2.2 Variables impacting observer responses to pain

The empathy model distinguishes top-down (i.e., features of the observer's knowledge and other dispositions), bottom-up (i.e., features within the patient of the incoming stimulus and the reactions to it), and contextual variables (i.e., type of relationship, affinity, attachment patterns, etc.) that influence observers' cognitive, affective, and behavioral empathic responses. One of the most robust top-down variables affecting observer empathic responses is the extent to which the *observer has catastrophizing thoughts* about the pain of somebody else. Catastrophizing is defined as an exaggerated negative orientation towards actual or anticipated pain experiences (Sullivan, Bishop, & Pivik, 1995). In the context of pediatric pain, research indicates that higher levels of parental catastrophizing about child pain is associated with heightened estimations of pain intensity in the child (i.e., step C decoding pain or cognitive response; Hadjistavropoulos et al., 2011), greater parental distress (i.e., affective response) (Goubert, Eccleston, Vervoort, Jordan, & Crombez, 2006; Goubert, Vervoort, Sullivan, Verhoeven, & Crombez, 2008), a greater action tendency of wanting to stop their child's pain (Caes, Vervoort, Eccleston, Vandenhende, & Goubert, 2011), and an increased parental engagement in more protective behaviors, such as restricting the child's activity to prevent further harm or pain (i.e., behavioral response) (Caes, Vervoort, Eccleston, & Goubert, 2012).

Similar findings have been observed among adults. Studies have revealed that catastrophizing thoughts about one's partners' pain are associated with a low mood and anxiety in both the catastrophizing partner (Leonard & Cano, 2006) and the patient partner (Cano, Leonard, & Franz, 2005), less empathic accuracy (i.e., reduced accurately in taking the perspective of the partner) (Leonard, Issner, Cano, & Williams, 2013), and more unsupportive responses by the catastrophizing partner during partner-patient interactions as reflected by increased invalidating responses (Cano, Leong, Williams, May, & Lutz, 2012). Research suggests that unsupportive reactions are accounted for by observers' emotional distress elicited by facing another in pain (e.g., Caes et al., 2011). It has been posited that observers often pursue the self-oriented goal of wanting to diminish their own level of distress elicited by viewing another person in pain, a process that may compromise observers' ability to

adequately attend to pain sufferers' needs or goals and respond to them accordingly (Simons, Goubert, Vervoort, & Borsook, 2016; Vervoort & Trost, 2017).

Empathic responses do not only depend upon top-down influences. Bottom-up influences, reflecting differences in individuals suffering from pain may also affect observers' responses. The extent to which pain is behaviorally expressed has been identified as a powerful bottomup factor. Behavioral expressions may include: (1) paralinguistic vocalizations, such as moaning or crying; (2) other nonverbal qualities of speech, such as volume, hesitancies or timbre; (3) visible physiological activity, such as pallor, sweating or muscle tension; (4) bodily activity, including involuntary reflexes and purposeful action; and (5) facial expressions (Craig, Prkachin, & Grunau, 2010). Different ways of expressing pain may serve different functions (Sullivan et al., 2006; Williams, 2002). For example, limb and bodily activity are considered to primarily serve to terminate pain or to prevent the body from further hurt or harm. In contrast, speech and facial expression can control pain only indirectly, and may primarily function to convey distress to and recruit help from others (Hale, 1997; Poole & Craig, 1992). The communicative value of the latter type of behavior has been supported by numerous research findings. For example, when patients with chronic pain express highintensity pain (by a combination of facial expressions and active pain behavior) observers estimated their pain to be more intense, and reported more sympathy and a greater inclination to help these patients (De Ruddere, Bosmans, Crombez, & Goubert, 2016; De Ruddere, Goubert, Stevens, Amanda, & Crombez, 2013). Other studies have shown that observers largely rely on facial displays of pain instead of bodily movements to estimate a person's pain intensity (Martel, Thibault, & Sullivan, 2011; Sullivan, Martel, Tripp, Savard, & Crombez, 2006). Observers also seem to interpret the different types of pain differently. Martel, Wideman and Sullivan (2012) found that patients displaying protective pain behaviors (e.g., guarding, rubbing) were perceived as being less trustworthy, and less ready to work compared to patients who communicate pain by means of facial expression of pain.

Besides pain behavior, other factors relating to the individual sufferer are described in the empathy model of pain, such as sufferers' level of pain catastrophizing, emotional disclosures about pain-related distress and support entitlement, and pain duration. Recent studies have investigated the impact of these bottom-up influences (Burns et al., 2015). Studies indicate that the degree of pain catastrophizing not only plays a role among observers, but also among those suffering from pain (Sullivan, 2012; Sullivan et al., 2001, 1995). In a diary study with married couples (Burns et al., 2015), pain catastrophizing of the patient (partner) was associated with a mix of positive and negative responses by the spouse. Cano et al. (2012) found that greater helplessness about pain on the part of the individual with chronic pain was associated with more unsupportive spouse responses. However, in a study by Burns et al. (2015), spouse behavior toward the patient appeared more consistently positive three hours after patients' pain catastrophizing appeared. Such findings are probably accounted for by increased pain expressiveness amongst those who highly catastrophize about own pain (see e.g., Vervoort et al., 2008), which, as noted above, strongly influences observer responses to sufferer's pain.

Not only pain expression and associated catastrophizing affect observer responses. Evidence suggests that the extent to which patients disclose their pain-related distress (e.g., express their worry and sadness about pain) impacts spousal support. In an observational study, pain disclosure was found to elicit more supportive responses (i.e., showing acceptance and understanding in a nonjudgmental manner) relative to unsupportive (i.e., contempt, disrespect and non-acceptance) responses by spouses (Cano et al., 2012). In the case of limited emotional disclosure, an unsupportive response was less likely to occur, compared to the consequences for patients who disclosed more often. Interestingly, unsupportive spouse

responses were frequently expressed after other strategies were attempted. This finding may suggest that spouses became frustrated after repeated expressions of their partners' pain-related distress. In line with this notion, when individuals with pain feel more entitled to receive support (i.e., when a patient thinks that others are responsible for providing pain-related support) and become more demanding for help, more unsupportive spouse behaviors are observed (Cano, Leong, Heller, & Lutz, 2009).

Noteworthy also is that the *actual* behavioral responses of others do not necessarily correspond with *perceived* observer responses by the individual in pain. Actual and perceived responses may be influenced by different bottom-up and top-down influences (see also Figure 7.1). For example, research on the impact of the sufferer's pain catastrophizing upon *perceived* observer behavior has shown that while persons in pain who report high levels of pain catastrophizing express higher levels of pain behavior, desire more support, and feel more entitled to receive support (Cano et al., 2009; Thibault, Loisel, Durand, Catchlove, & Sullivan, 2008; Vervoort et al., 2008), they perceive their partner's response styles as more punitive rather than supportive (Boothby, Thorn, Overduin, & Charles Ward, 2004; Gauthier, Thibault, & Sullivan, 2011).

To date, most research has focused on the impact of the characteristics of the individual in pain (instead of the observer) in explaining others' responses. Research shows mixed patterns, such that pain catastrophizing (of the individual with pain) and the associated pain expression, sometimes elicits supportive responses and sometimes elicits unsupportive responses. In other words, although expressing pain verbally or nonverbally might cause an increase in support, the probably well-intended support provisions are not always perceived as being supportive (e.g., Boothby et al., 2004).

Finally, *contextual* variations (e.g., type of the interpersonal relationship, affinity, attachment patterns) may also influence observers' empathic responses towards a sufferer's pain. For instance, Englis et al. (1982) found that seeing somebody in pain elicited distress when the observer had a cooperative relationship, but not when the observer had a competitive relationship with the sufferer. More recently, Bailey and colleagues (2015) found that caregivers' attachment avoidance was negatively associated with providing support aimed at alleviating the pain. Individuals high in attachment avoidance are believed to have had caregivers who were consistently unavailable and rejecting. These individuals therefore develop a discomfort with emotional closeness, emphasize self-sufficiency and provide low levels of support to their partner (Feeney & Collins, 2001).

Both the communications model of pain and the empathy model of pain provide a valuable framework for understanding how pain can be constructed as an interpersonal experience (Goubert et al., 2005; Hadjistavropoulos et al., 2011). Various studies have supported the validity of these frameworks by showing that bottom-up, top-down, as well as contextual influences affect observer cognitive, affective and behavioral responses towards the person in pain. These observer responses may be supportive or unsupportive. However, it remains unclear why or when observer responses are or are not helpful. In an attempting to understand the impact of observer responses, various theoretical models have been developed.



**Figure 7.1.** Pain as an interpersonal experience (adapted from Goubert et al., 2005 and Hadjistavropoulos et al., 2011).

## 3. The impact of others upon pain: theoretical models

## 3.1 Operant Theory

The operant model of pain behavior, as originally proposed by Fordyce (1976), is one of the major models that seeks to explain why pain is affected by the response of the immediate social environment. That explanation occurs via principles of operant reinforcement. More specifically, Fordyce (1976) distinguishes between behaviors that reinforce and those that discourage (or punish) an individual's pain displays. Reinforcement may result from the provision of care and special attention, such as taking over the usual tasks and responsibilities of the person in pain. This type of response have also been labeled as *solicitous* response (Newton-John, 2002). Fordyce's model has drawn attention to the importance of identifying and changing solicitous responses, as these are expected to affect and shape pain behaviors (e.g., complaining of pain, moaning, holding the affected area, moving carefully to prevent further pain, and grimacing). Specifically, receiving solicitous support is considered to be rewarding to those in pain, and hence, it is expected to positively reinforce pain behaviors and to inadvertently promote further displays of pain. Prolonged pain behavior, in turn, may interfere with the usual healing process, thereby promoting the transition from acute pain (e.g., from injuries) to chronic pain and pain-related disability. In contrast, observer responses such as ignoring pain displays or expressing frustration and irritation (e.g., "for goodness sake, stop complaining about your back!") have been labeled *punishing* or *discouraging* responses. These are hypothesized to decrease the likelihood of pain behavior. For example, ignoring or reacting negatively to a display of pain usually leads to a decrease or extinction of that behavior (Romano et al., 1992). However, no longitudinal study has yet examined the extent to which receiving solicitous or punishing responses are related to changes in pain behavior and disability over time (Leonard, Cano, & Johansen, 2006).

The impact of observer responses on sufferers' pain and their pain behavior has gained considerable attention after Fordyce's original publication (see e.g., Paulsen & Altmaier, 1995; Romano et al., 1992), with evidence providing support for operant behavior models of chronic pain (Newton-John, 2002). In particular, studies have shown that receiving *solicitous* support is positively associated with self-reported pain-related disability (Fillingim, Doleys, Edwards, & Lowery, 2003; Williamson, Robinson, & Melamed, 1997) and poorer functioning (Kerns et al., 1991; Lousberg, Schmidt, & Groenman, 1992; Romano et al., 1995). These associations appear robust, as they have been observed among various patient samples including patients with spinal cord injuries and amputees (Jensen, Moore, Bockow, Ehde, & Engel, 2011), headache patients (Pence, Thorn, Jensen, & Romano, 2008), men with chronic prostatitis (Ginting, Tripp, & Nickel, 2011), and patients suffering from chronic fatigue (Romano, Jensen, Schmaling, Hops, & Buchwald, 2009). In further support of the operant

model, observational studies have shown that patient pain behaviors and partner solicitous responses tend to follow each other sequentially (Romano et al., 1992). Likewise, receiving *punishing* responses, has been found to be associated with lower levels of patient pain behavior and higher activity levels (Flor, Kerns, & Turk, 1987).

However, there are some inconsistencies. For instance, research has shown that negative responses to pain behavior, such as expressing irritation or frustration or ignoring the patient, may result in patients being likely to be depressed (Kerns, Haythornthwaite, Southwick, & Giller, 1990), more anxious (Cano, Gillis, Heinz, Geisser, & Foran, 2004), and relationally dissatisfied (Kerns et al., 1991). Negative expressions in response to pain behavior have likewise been found to be positively correlated with patient disability (Buenaver, Edwards, & Haythornthwaite, 2007; Raichle, Romano, & Jensen, 2011). In addition, several studies have shown no associations between solicitousness and patient disability (see e.g., (Campbell, Jordan, & Dunn, 2012; Flor, Kerns, et al., 1987; Schwartz, Slater, & Birchler, 1996) or have found evidence counter to expectations, such that solicitousness buffered the negative effects between catastrophizing and disability (see e.g., Vervoort, Huguet, Verhoeven, & Goubert, 2011). There may be various reasons why operant principles fall short in explaining the impact of observer responses. One likely explanation is the often used assumption about the inherently rewarding or punishing quality of a given type of response. An implicit idea is that those in pain tend to experience solicitous support as a positive, and hence, as a rewarding or reinforcing experience. However, Newton-John and Williams (2006) found, among individuals with chronic pain, that solicitous support behaviors from partners were perceived as rather negative responses, making them feel helpless, infantilized, or burdensome. Further, findings indicate that the effects of solicitousness differ as a function of individual differences in patients, such as mood disturbance (Campbell et al., 2012) and marital satisfaction (Flor, Turk, & Berndt Scholz, 1987). Below, we argue that goal or need-based theoretical approaches provide a promising avenue in understanding why the impact of a given type of observer response is not fixed. Specifically, the *intimacy process model* applied in the context of pain provides a possible explanation of the beneficial effects of 'solicitous' responses, by positing that these responses may also serve to enhance one's need for intimacy. The broader *social support literature* as well as *motivational literature* likewise points to the importance of attuning helping responses to one's goals or needs.

#### 3.2 Intimacy process model

According to the intimacy process model, intimacy develops when a person's selfdisclosure of emotions is met with empathic and *validating* responses of another person. A validating response is defined as a response reflecting understanding and acceptance of the experience of another person (Cano & Williams, 2010). While sharing some overlap with solicitous behaviors, validating responses viewed within the intimacy process model are not conceptualized in operant-behavioral terms (e.g., as reinforcers of pain behaviors), but are thought to promote emotional intimacy and closeness within a relationship. Examples include empathic listening, verbally reflecting and acknowledging, clarifying and summarizing, reciprocating vulnerability, and responding with action.

In a similar vein, *invalidating* responses and punishing responses have some similarities, but invalidation refers more broadly to emotional distancing rather than in terms of extinction of pain behaviors. Invalidation consists of statements that convey contempt, disrespect, and non-acceptance of the pain sufferer's experience. Examples demonstrate that this is a broad category, as it includes non-empathic responses to a partner's emotional expressions, inattentiveness to a partner's emotion, missed opportunities for validation, changing the subject, telling the spouse what they should be thinking/feeling, or putting the spouse down (Cano et al., 2012). Research has shown that the patient's self-disclosure of emotions as well as the partner's responsiveness and empathy predict relationship intimacy and satisfaction

(Laurenceau, Barrett, & Pietromonaco, 1998; Long, Angera, Carter, Nakamoto, & Kalso, 1999; Mitchell et al., 2008). In the context of pain, verbal communications about one's thoughts and feelings regarding pain may entail attempts to disclose emotion, recruit emotional support, and build intimacy. In contrast to operant models, in which talking about pain constitutes pain behavior that is better extinguished, intimacy process models (Laurenceau et al., 1998) conceptualize such behavior as emotional self-disclosure. An empathic or validating response, following an emotional self-disclosure, may then lead to an increase in closeness and relationship satisfaction (Laurenceau, Barrett, & Rovine, 2005) that empowers the person in pain to more adequately cope with or regulate pain, rather than serving as reinforcement of pain behavior and the associated suffering of the person in pain (Edmond & Keefe, 2015).

Evidence supports the beneficial effects of partner empathic and validating responses. For instance, Kasle and colleagues found that patients with rheumatoid arthritis reported better psychological and physical health when they had partners who provided validating responses (Kasle, Wilhelm, & Zautra, 2008). Stephenson and colleagues found that empathic responding from the spouse buffered against negative effects of partner depression on functional and marital outcomes for patients with rheumatoid arthritis one year later (Stephenson, DeLongis, Esdaile, & Lehman, 2014).

To date, the notion that observer caregiving exerts positive effects and empowers individuals in pain when it matches individuals' *needs* for emotional intimacy and closeness remains to be investigated. Yet, the idea that support is beneficial when it matches with one's needs is clearly echoed in the broad social support as well as the motivation literature.

## 3.3 Social support literature

The social support literature commonly distinguishes between instrumental support (e.g., showing a person how to solve a problem), tangible support (e.g., providing goods), informational support (e.g., giving advice), or emotional support (e.g., offering validation and reassurance) (Mayseless, 2016). Research has shown that none of these different types of responses can, in and of themselves, be considered "adaptive". Findings have also demonstrated that receiving high levels of these types of support may contribute to positive effects (Abraído-Lanza, 2004; Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993). However, studies have also found null or even negative effects (e.g., Bolger & Eckenrode, 1991; Bolger, Foster, Vinokur, & Ng, 1996; Bolger, Zuckerman, & Kessler, 2000). In fact, findings suggest that whereas *perceived support availability* (the general sense that a person can get support if needed) is beneficial (e.g., Cohen, 2004) the results for actual received support are mixed (Mcclure et al., 2014). To account for these inconsistent and sometimes paradoxical findings, various models have been put forward with one common denominator: support is beneficial when it matches receivers' personal needs. For instance, the optimal matching model of social support (Cutrona, 1990) posits that the specific needs of the support seeker derive from multiple sources, including the preferences of the support seeker (Horowitz et al., 2001) and the nature (e.g., the controllability) of the stressor (Cutrona & Russell, 1990). Uncontrollable events require emotional support, whereas controllable events require instrumental support. In line with the optimal matching model (and related to intimacy process models described above), Reis (2004) introduced the concept of perceived partner responsiveness to one's needs as a core concept in the study of intimacy and closeness. He argued that relationship quality depends on beliefs about a partner's responsiveness - that is, on the perception that a partner understands, values, and supports important aspects of the self. The extent to which the individual believes that their partner understands, validates, and cares is crucial to build a satisfying and lasting romantic relationship. This concept is closely related to validating partner responses (Cano, Barterian, & Heller, 2008).

Rafaeli and Gleason (2009) developed the skillful support framework to help researchers and practitioners achieve greater levels and greater quality of support, with a specific focus upon intimate relationships. This model distinguishes between four important aspects of support that may explain when support is attuned to the needs of the support receiver, and hence, when support is *skillfully* provided. It assumes that by attending to the when (timing), what (content), how (process) and who (reciprocation) of support, couples can increase the benefits and reduce the costs inherent even in the most well-intended support attempts. In particular, this model states that the effectiveness of partner support is partly dependent on timing; i.e., when the support is provided. A second aspect involves support multidimensionality (content), referring to the notion that support can involve various types of emotional or practical assistance. The greatest benefit is likely to occur when there is optimal matching between the type of support provided and the type of support needed. The latter may constitute both objective needs that arise in the situation or *perceived* needs of the support recipient (i.e., what the support recipient desires; see Rafaeli & Gleason, 2009 for an overview). A third aspect involves the process or the degree of visibility and directness of support provision, both of which may hamper support effectiveness. Visible support can elicit feelings of inadequacy, indebtedness, and inequity as well as increased and unwanted attention to the stressor in recipients. Invisible support may reduce these negative effects, although there are studies showing that both visible and invisible support were beneficial, but only if the recipient perceived his or her partner as understanding and validating (Maisel & Gable, 2009). Directive support runs the risk of demoralizing recipients. Nondirective support tends to be more effective, perhaps because it encourages and validates the recipient's view of the situation. The reciprocation of support, or the equity in the relationship is considered a

fourth element of skillful support. In particular, giving support allows the person in pain to demonstrate competence. In doing so, attention is drawn away from one's own problem and from the imbalance in neediness; and it enables the patient to "equalize" the relationship. For instance, individuals with chronic pain may offer emotional support to their partner when he or she had a tough day at work. Being able to provide help to your partner (without chronic pain) might elicit a feeling of competence on the one hand, and show, on the other hand, that it is not always the partner with pain who is in need of help.

In sum, both the intimacy process model within the pain literature as well as the general social support literature emphasize the key adaptive role of observer support that matches the actual or perceived needs of sufferers. Yet, some important questions remain. Most notably, a *variety* of needs have been identified as being critical for adaptive outcomes. The intimacy process model of pain focuses upon the role of intimacy and closeness. The optimal matching model states that the controllability of a stressor is the key dimension on which support provision has to be matched. The skillful support framework focuses on the need for good timing and reciprocity of support. However, it remains unclear *which* needs matter most. Further, it is also not clear *why* some observers behave in ways that are not responsive to the other person's needs. Below, we will argue that Self-Determination Theory (SDT) as well as a recently proposed affective-motivational theoretical account of interpersonal pain dynamics may help in resolving these questions.

#### 4. Self-Determination Theory

*Self-Determination Theory* (SDT; Deci & Ryan, 2000; Weinstein, Legate, Kumashiro, & Ryan, 2016) can be situated within the *humanistic* tradition as it starts with the assumption that humans are active, growth-oriented organisms. Human growth manifests through the engagement in interesting and personally valuable activities, the gradual development and refinement of one's capacities, and the pursuit of satisfying relationships and connection in

larger social groups (Deci & Ryan, 2000). The organismic-dialectical perspective further proposes that these developmental tendencies require ongoing social nutriments and supports. As such, the social environment can either support or thwart these natural inclinations, with resulting implications for people's thriving and maladjustment (Vansteenkiste & Deci, 2003). More specifically, individuals are said to seek out activities and build up relationships that allow for the satisfaction of their psychological needs for autonomy, competence, and relatedness. This is a strong meta-theoretical (i.e., organismic-dialectical) assumption that provides the basis for generating and testing novel hypotheses. To the extent that individuals are successful in finding such need-satisfying opportunities, they may experience positive psychological outcomes (for an overview see Deci & Ryan, 2000; Vansteenkiste & Ryan, 2013).

## 4.1 Three essential psychological needs

SDT posits that, just as a plant needs soil, water, and light to thrive, individuals have a set of *basic psychological needs*, the satisfaction of which are essential for individuals to grow and reach their full potential (Deci & Ryan, 2000). These needs are said to be psychological, inherent, and universal. Depending on the degree to which these needs get satisfied or frustrated, one can reliably predict differences, both interpersonally as well as intrapersonally, in well-being, (mal)adjustment and even psychopathology (Vansteenkiste & Ryan, 2013). SDT makes an explicit distinction between the satisfaction and frustration of needs. Particularly, within intimate relationships, partners can act in either a supportive or a frustrating manner with respect to each other's needs. More specifically, a lack of need satisfaction involves being indifferent towards the partner's needs, whereas need frustration involves a more active and direct way of undermining the partner's needs (Vansteenkiste & Ryan, 2013). As noted, SDT identifies three such basic psychological needs: the need for autonomy, competence, and relatedness (Deci & Ryan, 2000). *Autonomy* refers to the need to engage in volitional activities and fully endorse one's behaviors. *Competence* involves feeling capable, self-efficacious, and optimally challenged. *Relatedness* refers to having a sense of belonging and feeling connected to others, and is closely connected to the notion of intimacy as proposed by Cano et al. (2012). Multiple studies, across diverse domains, age groups, and cultural backgrounds have provided evidence for the benefits associated with need satisfaction and the costs associated with need frustration (see Vansteenkiste et al., 2010).

As an example, Chen et al. (2015) found, in a culturally diverse sample involving American, Belgian, Peruvian, and Chinese university students, that psychological need satisfaction was a robust predictor of participants' vitality, whereas need frustration predicted depressive symptoms. Notably, such effects even emerged for individuals attaching low importance to the satisfaction of these needs (i.e., need valuation) or who have little desire to get them met (i.e., need desire), suggesting that the benefits of need satisfaction apply regardless of differences in explicit need strength. This universality claim is empirically supported by a growing number of studies (Chen et al., 2015; Sheldon, Cheng, & Hilpert, 2011; Tay & Diener, 2011), of which some used implicit measures for need strength (e.g., Schüler, Sheldon, & Fröhlich, 2010). This hypothesis is in line with the theoretical conceptualization of needs as necessary for psychological wellbeing rather than as socially constructed preferences. Hence, according to SDT, satisfaction of the psychological needs is the most meaningful route toward explaining variance in individuals' well-being. As these studies show, the possible moderating role of need valuation and need desire in the relation between psychological need satisfaction and wellbeing is considered minimal.

#### 4.1.1 The role of psychological needs within romantic relationships

Our interactions with others can either support or thwart the satisfaction of our three basic needs, which in turn predicts the quality of these relationships. To date, most relationship theories rely heavily on relatedness-type needs such as perceived partner responsiveness, intimacy, or felt security, as being critical for well-being (Knee, Hadden, Porter, & Rodriguez, 2013; Knee, Porter, & Rodriguez, 2014). SDT assumes that more than satisfaction of relatedness is at stake. Specifically, when significant others (e.g., romantic partners, parents) are not supportive of one's autonomy and competence, the quality of those relationships will equally be suboptimal (Knee et al., 2014).

Apart from predicting individuals' well-being, studies have demonstrated that need satisfaction is beneficial for relationships. For example, Patrick and colleagues (2007) found that the fulfillment of each need within the context of romantic relationships uniquely predicted relationship functioning and well-being. Notably, experiences of need fulfillment in a relationship are not only predictive of one's own relationship satisfaction, but these effects also radiate to the partner's perception of their relational functioning (Patrick et al., 2007). Other studies also pointed out that both relationship-based need satisfaction and need frustration contribute to relationship satisfaction (Vanhee, Lemmens, & Verhofstadt, 2016). Vanhee and colleagues found that frustration of relational needs related to how dissatisfied partners were within their relationship, how frequently partners initiated conflicts, and how they tried to solve these conflicts (Vanhee, Lemmens, Stas, Loeys, & Verhofstadt, 2017).

In the context of chronic pain, only a few studies have investigated the role of spousal need support, and more specifically the role of support for autonomy behavior. *Autonomy support* (AS) is characterized by the provision of choices and options, the reference to a rationale (i.e., a meaningful explanation for why a particular effort is expected), the minimizing of pressure, and the capacity to take the other's frame of reference. Examining

autonomy support in the context of pain is an important topic. The pain literature has shown that significant others (e.g., romantic partners) are closely involved in the various life domains of the sufferer, such as adapting work and family life or attending doctor visits and pain treatments. Spousal autonomy support involves acknowledging the partner's perspective, providing choice, encouraging self-initiation, and being responsive to the partner (Deci, La Guardia, Moller, Scheiner, & Ryan, 2006). In the context of pain, a diary study conducted by Martire et al. (2013) showed that daily spousal autonomy support was associated with higher levels of daily physical activity in patients with knee osteoarthritis. In a longitudinal study among individuals with chronic musculoskeletal pain, Uysal and colleagues showed that, after a 6-months, perceived spousal autonomy support yielded a positive effect on the change in need satisfaction and well-being in patients, independent of pain intensity (Uysal, Ascigil, & Turunc, 2017). These studies indicate that perceived partner' autonomy support may be beneficial in terms of behavior change, and physical and psychological functioning. Accordingly, implementing SDT within pain research appears to offer a promising route to increasing our understanding of when observer support may contribute to improved pain outcomes.

Findings showing that autonomy support contributes to better outcomes are in line with the above described intimacy process model (Cano et al., 2012). Indeed, when spouses are autonomy-supportive and take the frame of reference of their partner, they also validate their own perspective. By fully acknowledging the thoughts and feelings of their partner, partners are more likely to feel that they can be themselves, without having to hide or suppress certain thoughts and feelings, with their relatedness being maximized at the same time. Given the autonomy- and relatedness-enhancing character of a validating response, it is not surprising that validation has shown to be predictive for relationship intimacy and satisfaction (e.g., Laurenceau et al., 1998).

The findings on spousal autonomy support are also in line with the literature on miscarried helping (Coyne et al., 1988), which refers to a relational process whereby a caregiver's desire to be helpful inadvertently contributes to negative interactions that result in poorer health and adjustment. This model states that a partner's (over)investment in being a good caregiver may lead to over-monitoring of health outcomes, conflict with the patient, and blaming oneself and the patient for unimproved health. Over-involvement of close others is considered a key variable determining deleterious outcomes because caregivers' overinvolvement may imply overprotectiveness, intrusiveness, and excessive helping in ways that undermine patients' sense of volition, inasmuch as they are forced to accept unwanted help or protection (Coyne & DeLongis, 1986; Fales et al., 2014). At the same time, such efforts to support the individual may cause relational distance or even conflict, and may lead patients to conclude that they are not trustworthy and, hence, incompetent to engage in tasks independently (Coyne, Wortman, & Lehman, 1988). Experiences of need frustration may, in turn, elicit feelings of resentment and anger (Chen, Soenens, Vansteenkiste, Van Petegem, & Beyers, 2016). In sum, by frustrating individuals' need for autonomy, competence and relatedness, well-intended support can be miscarried and provoke maladaptive effects (Deci & Ryan, 2000).

## 4.1.2 The role of psychological needs within other relationships

Supporting or thwarting someone's needs does not only matter in the context of close relationships, but also in more formal organized relationships in the health-care context. Autonomy support in a health care context requires health care professionals to acknowledge the patient's perspective, to provide choices for treatment options, to give rationales for treatment recommendations, and to minimize the patient's experience of control and pressure from the physician or from significant others in their lives (Williams, Lynch, & Glasgow, 2007).

Several studies have examined the role of autonomy support in different health contexts. These studies have shown beneficial effects for glucose control in diabetes (Williams, McGregor, Zeldman, Freedman, & Deci, 2004), weight loss and physical exercise in obese patients (Williams, Grow, Freedman, Ryan, & Deci, 1996), and less anxiety and fear for dental treatment (Halvari, Halvari, Bjornebekk, & Deci, 2012). In the domain of pain, one study has examined the effectiveness of an SDT-based intervention on physiotherapists' needsupportive communication skills (Murray et al., 2015). Attesting to the potential of SDTbased interventions, this study demonstrated that physiotherapists became more autonomysupportive in their communications with their patients with chronic low back pain. Unfortunately, its effect upon pain outcomes was not investigated. However, promising evidence for the effectiveness of SDT-based interventions in enhancing patient's health behavior and outcomes has been garnered in other health care contexts. After 6-weekly 60minute counseling sessions (Badr, Smith, Goldstein, Gomez, & Redd, 2015) grounded in SDT-principles, patients with lung cancer reported improvements in depression, anxiety and feelings of competence and relatedness, compared with patients who received care as usual. Moreover, caregivers of the lung cancer patients in the intervention group reported less caregiver burden and more autonomous motivation to provide care (Badr et al., 2015). Similar findings have been obtained among patients with heart failure, who were found to report greater perceived confidence in and motivation for heart failure self-care if they had received autonomy-supportive care (i.e., the intervention group) compared with care as usual (Stamp et al., 2016). Further, a SDT-based intervention proved to be effective in increasing prolonged tobacco abstinence and lowering low-density lipoprotein-cholesterol in adults (Williams et al., 2006), and in promoting physical activity and healthy eating in overweight and obese adolescents (Fenner, Straker, Davis, & Hagger, 2013).

In sum, SDT-based interventions appear promising as they can make a difference in psychological, physiological and behavioral patient outcomes. Using SDT may be helpful because the three basic psychological needs when satisfied have the potential for enhancing the welfare of (pain) patients. Although most research in the domain of couples highlights the role of relatedness-type needs, SDT adds an important role for autonomy and competence. Most SDT-applications in health care have focused on the role of autonomy support. Nevertheless SDT states that the satisfaction of competence and relatedness is likewise crucial for inter- and intrapersonal functioning. More research is needed to investigate the role of need supportive behaviors in significant others in the domain of health care and chronic pain.

## 4.2 The role of different motives for support provision

Self-Determination Theory (SDT; Deci & Ryan, 2000) postulates that promoting particular types of support behavior (e.g., autonomy supportive behavior) also requires taking into account differential underlying motives that may explain *why* observers initially provide help or care. Gaining insight into different motives for providing care might also be relevant to explaining why support providers become distressed. Specifically, a large number of studies has documented that caring for others with mental or physical health problems, like chronic pain or cancer, may lead to the development of a sense of burden, distress, and burnout (Vitaliano, Zhang, & Scanlan, 2003). For example, findings demonstrate that partners of individuals with chronic pain experience elevated levels of distress (Leonard & Cano, 2006) compared with partners of individuals without chronic pain. The levels of disability in pain patients are related to spousal relational dissatisfaction (Geisser, Cano, & Leonard, 2005) and caregiver exhaustion (Jones, Hadjistavropoulos, Janzen, & Hadjistavropoulos, 2011). Yet, it is unclear why some partners experience these challenges and others do not. SDT postulates that providing support may be driven by different motives, which may relate to the style of helping and to the enthusiasm displayed by the helper him- or herself. As a result, the help

may vary in its perceived 'helpfulness', depending on its need-satisfying or need-thwarting properties.

#### 4.2.1 Types of motivation

In SDT, different types of motivations can be distinguished and are located on a continuum ranging from highly *controlled* to highly *autonomous* (see Figure 7.2). This distinction is also important in the context of helping behavior (Weinstein & Ryan, 2010). *Controlled* motivation refers to pressure to help, which can originate either from the outside, such as the avoidance of the patient's criticism or the necessity to meet the patient's demanding expectations (i.e., *external* motivation), or from the inside, such as the avoidance of guilt feelings or the internal obligation to be loyal to the patient (i.e., introjected motivation). In contrast, when partners help because they perceive the helping to be personally important (i.e., *identified motivation*), and coherent with other important values (i.e., integrated motivation), or they help out of enjoyment and inherent satisfaction associated with the helping (i.e., *intrinsic motivation*), they are said to act for *autonomous* or volitional reasons. Yet more importantly, SDT proposes that motivations are susceptible to change. This is called *internalization* (Deci & Ryan, 2000), an active, natural process in which individuals try to transform social requests into personally endorsed values. By doing this, individuals gradually identify with the importance of social regulations and fully accept them as their own. When this process is hindered, regulations and values may either remain external or become only partially internalized to form *introjected* or *identified motivation*.



Figure 7.2. Different types of helping motivation according to Self-Determination Theory

Motives for caregiving may vary over time and most individuals tend to possess a mix of different motivations. A person's motivational profile may change from one occasion to another and in different phases of the relationship (Collins, Ford, Guichard, Kane, & Feeney, 2010).

## 4.2.2 Helping motives are related with caregiving burden

Care is provided because of a large variety of changing motives, and it may not be surprising that the caregiving process might induce both positive and negative feelings in the person providing the care. Generally, caring goals that are autonomously chosen are associated with higher levels of caregiver well-being as opposed to support provided because of a perceived obligation or the need for self-enhancement (Crocker & Canevello, 2008; Feeney & Collins, 2003; Kim, Carver, & Cannady, 2015; Kindt et al., 2015). Among male cancer caregivers, autonomous caregiving motives related to better mental health three years later (Kim et al., 2015). In contrast, caring driven by obligatory motives was associated with negative feelings in the support provider reflective of a strong sense of burden, whereas helping as an expression of closeness and affection was not associated with negative feelings despite being associated with greater efforts to help (e.g., Cicirelli, 1993). Similar results have

been reported for patients with chronic pain as well. Kindt et al. (2015) showed that partners who were volitionally committed (i.e., displayed autonomous helping motivation) to provide help rather than experiencing it as a daunting duty (i.e., displayed controlled helping motivation) reported better wellbeing and higher relationship quality. Furthermore, findings showed that partners with more autonomous helping motives experienced less helping exhaustion. Interestingly, a subsequent diary study revealed that daily autonomous helping motives in partners positively related to changes in partners' affective (e.g., positive affect), relational (e.g., conflict) and help-specific (e.g., exhaustion) functioning (Kindt, Vansteenkiste, Loeys, & Goubert, 2016). Taking into account different motives for providing care may provide an explanation for why some support providers become distressed and develop a "caregiving burnout".

## 4.2.3 Being need supportive (or not) depends on helping motives

The reasons for providing help may also impact the caregiver's attunement to another's needs and the effectiveness of the provided help. Based on SDT (Deci & Ryan, 2000), we reason that autonomous helping motivation might be associated with improved psychological need satisfaction in individuals with pain because the basic attitude of autonomously motivated caregivers is one of openness, curiosity, and sincere receptivity for the patient's preferences and needs. Such caregivers are more likely to take the frame of reference of their patients, thereby patiently attuning the timing, frequency and amount of provided help and support according to the patients' situation and needs. In contrast, on days when caregivers display more controlled motivation, they are more likely to adopt tunnel vision, thereby placing their own standards, own goals, and own agenda more centrally (Kindt et al., 2016). As a result, caregivers will respond in a more restrictive, less responsive way, thereby missing opportunities to nurture the patient's psychological needs. This assumption is in line with a recently proposed affective-motivational theoretical account of interpersonal dynamics in the

context of pain (Vervoort & Trost, 2017; further discussed below). This model states that individuals with high self-oriented goals, rather than other-oriented goals, when faced with another in pain, may become less sensitive to feedback when faced with another in pain. The reduced feedback sensitivity may impede the receptivity or attention to the needs of the person in pain, potentially contributing to rigid or inflexible caregiving behavior.

This pattern is indeed what studies have shown. Greater autonomy in helping others is not only associated with increased closeness and well-being in helpers themselves (Deci et al., 2006; Knee, Patrick, Vietor, Nanayakkara, & Neighbors, 2002; Patrick et al., 2007; Weinstein & Ryan, 2010), but it also benefits the recipients of help (Gagné, 2003; Weinstein & Ryan, 2010). These findings have been replicated in patients with chronic pain as well. Kindt et al. (2015) showed that partners' autonomous, relative to controlled helping motives contributed to a better relational functioning of patients, but only for those with high levels of pain. In a subsequent multi-informant 14-day diary study, this moderation of pain intensity was not replicated (Kindt et al., 2016). Daily autonomous helping motivation contributed to patient outcomes (e.g., affect, relational conflict, perceived amount of and satisfaction with help, and disability) regardless of experienced pain that day. Notwithstanding, daily pain clearly was as an important predictor of patients' daily functioning. Further, findings of both studies revealed that these benefits occurred because autonomous and controlled motivation differentially contributed to the satisfaction of the three universal psychological needs of autonomy, competence and relatedness. More specifically, when partners were volitionally committed to providing help, rather than feeling pressured to do so, both partners and patients reported higher relationship-based needs satisfaction. Additionally, findings indicated that fluctuations in patients' daily needs satisfaction and frustration explained why partners' helping motives were related with patients' daily functioning (Kindt et al., 2016).

The reported findings clearly attest to the notion that helping motives should be taken into account when trying to understand when helping responses are more or less attuned to the needs of the person suffering from pain. Provided that motives for offering help and the associated emotions are related to the goals that caregivers pursue, it follows that understanding which goals caregivers have as well as how caregivers regulate these goals is paramount. These ideas are well articulated by the affective-motivational account of interpersonal dynamics in the context of pain (Vervoort & Trost, 2017).

#### 4.2.4 Helping motives depend on observer goal and emotion regulation

The affective-motivational model of interpersonal pain dynamics (Vervoort & Trost, 2017) posits that pain touches on a fundamental tension between the goals we hold for the other person in pain (i.e., other-oriented goals) and the goals we hold for ourselves (i.e., selforiented goals). The prioritization of self- versus other-oriented goals is hypothesized to instigate different emotional and motivational processes that impact the nature and effectiveness of observer behavioral responses to sufferers' pain. More specifically, preferential attunement to *self-oriented goals* will likely result in self-focused emotional states (i.e., often denoted as personal distress). These will in turn prioritize avoidance motives (movement away from the person in pain and their respective needs) and drive behavior toward one's own needs. In contrast, attunement to other-oriented goals will promote otheroriented emotional states (often denoted as sympathy), prioritizing approach motives (towards persons in pain and their needs) and promoting behaviors responsive to the needs of another person (Elliot, Eder, & Harmon-Jones, 2013; Gable & Gosnell, 2013). The two types of (conflicting) goals that caregivers can have differ in the extent to which they focus on the satisfaction of caregivers' own needs or the needs of the recipient of care. Vervoort & Trost (2017) argue that both self- and other-oriented goals and associated motives/emotional states might underlie ostensibly similar caregiving behavior. For instance, when your partner is in pain you can provide some medication (a pain control behavior) or you can distract your partner with humor (behavior not focused on pain control). However, both caregiving behaviors might originate from a self-oriented goal, prioritizing avoidance motives (e.g., feeling uncomfortable in the presence of your partner's suffering or wishing to return to a personal work assignment) or from an other-oriented goal, prioritizing approach motives (e.g., quickly ease your partner's suffering or encourage your partner to engage in his/her daily activities), thereby differentially impacting on the needs of the person suffering from pain.

Caregiving is hypothesized to have a different impact upon individuals' pain outcomes because the underlying mechanisms that play a role in self or other-oriented caregiving behavior differ. As such, this model coincides with SDT (Deci & Ryan, 2000). More specifically, autonomous, instead of controlled, helping motives are expected to predict the most beneficial outcomes because this type of helping is better attuned to the needs of the person in pain who is receiving the support (e.g., Kindt et al., 2016). Future research could investigate whether controlled helping motives, as defined within SDT, are related with having more self-oriented goals, whereas more autonomous helping motives are in line with more frequent other-oriented goals.

Vervoort & Trost (2017) further suggest at least two mechanisms that may affect the nature and effectiveness of caregiving, depending upon whether caregiving is driven by selfor other-oriented goals and associated motives and emotions. The first mechanism is the *quality of the caregiving response*, reflected in such non-verbal characteristics as tone of voice, interpersonal distance, touch/physical contact, and facial expression. For example, selforiented emotions and avoidance motives may reveal a less sincere tone in which a similar message is communicated when trying to reassure someone. This mechanism is also in line with findings, based on SDT (Deci & Ryan, 2000), showing that autonomous or volitional helping motives, relative to controlled or pressured ones, are related to a better quality of the helping behavior (i.e., patients are more satisfied with the received help, their psychological needs are more satisfied; Kindt et al., 2016) and they feel closer to the helper (Weinstein & Ryan, 2010).

A second mechanism may be caregivers' *sensitivity to feedback cues* as provided by the person suffering from pain. For instance, self-oriented emotion and avoidance motives may impede observer receptivity or attention to sufferer feedback, potentially contributing to rigid/inflexible caregiving behavior instead of flexible caregiving behavior, which is hypothesized to originate from other-oriented emotion and approach motives. This idea is also in line with SDT, assuming that controlled motivation in the helping process is conducive to a tunnel vision wherein one's own needs are prioritized instead of being receptive to the needs of the help recipient.

It then follows that the regulation of goals and associated emotions is key to promoting the right balance between self- versus other-oriented emotions and goals. When other-oriented emotions and goals prevail over self-oriented ones, this pattern tends to facilitate optimal caregiving and pain outcomes. Emotion regulation processes may target cognition, action tendencies, somatic responses, expressive behavior, and/or subjective feelings comprising pain-related emotions. Reappraisal (e.g., reinterpreting the meaning of a particular goal) and attentional deployment (e.g., engagement versus distraction) strategies are empirically well supported (Webb, Miles, & Sheeran, 2012). However, more research about emotion regulation processes in the interpresonal context of pain is warranted.

#### 5. Conclusions

Pain is not only a private experience but also an interpersonal one. Pain affects others in various ways. Others' responses, in turn, further shape sufferers' pain experience and behaviors. Especially close relationships, such as parent-child relationships and intimate

relationships, are challenged by the need to deal with pain. Chronic pain couples face unique difficulties of experiencing a long-term chronic illness which often requires more intensive caregiving, but also experience problems that are common to all relationships (e.g., child rearing, finances, work-issues, etc.).

Various attempts have been made to classify observer behavioral responses in terms of their expected impact upon the experience and actions of an individual with pain. In this chapter, we discussed the operant framework, originally formulated by Fordyce (1976), which has received considerable attention in the pain literature. Although the introduction of the operant framework definitely made important contributions regarding the critical role of observer behavior in understanding sufferers' pain outcomes, it has fallen short in capturing the of interpersonal dynamics unfolding in the context of pain. One problem with the operant framework is that research is often based on a priori assumptions about the reinforcement value of an observer response, instead of reflecting the actual reinforcing consequence. Likewise, evidence has shown that observer punishing responses, such as expressing irritation or ignoring the patient, are not always an adequate strategy to diminish pain behavior (Flor, Kerns, et al., 1987). It has become increasingly clear that any given type of behavioral response cannot, in and of itself, be considered adaptive or maladaptive (e.g., Bolger & Eckenrode, 1991; Bolger, Foster, Vinokur, & Ng, 1996; Bolger, Zuckerman, & Kessler, 2000).

We have argued that need-based approaches, such as the intimacy model applied to pain, as well as the general social support literature may prove valuable in understanding why observers' behavioral responses may differentially impact patient behavior and pain-related outcomes; i.e., behavioral responses might be considered supportive/helpful depending upon the extent to which these responses meet the needs of the person in pain (Deci & Ryan, 2000; Rafaeli & Gleason, 2009). Self Determination Theory (SDT) defines a set of basic psychological needs that are considered essential for one's well-being, i.e., the need for autonomy (i.e., to volitionally engage in activities), competence (i.e., to feel self-efficacious) and relatedness (i.e., feeling close to others), that can be satisfied (or not) during caregiving interactions. Drawing upon SDT as well as an affective-motivational account of interpersonal dynamics in pain (Vervoort & Trost, 2017), we described why observers may not always behave in ways that are responsive to the other person's needs. We highlighted that observers' goals and associated motives and emotional states are likely to be critical in this regard. Emotion regulatory strategies are important in creating a balance between the different types of goals and emotions (self-oriented versus other-oriented). Accordingly, goal and emotion regulation processes constitute a critical target for future research and treatment as they may facilitate caregiving behaviors that are increasingly attuned to the needs of the sufferer in pain, thereby enhancing adjustment for the person in pain.

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