

EXPLICATING PATIENT APPRAISALS OF CHRONIC PAIN SELF-MANAGEMENT  
ADVICE IN PATIENT-PROVIDER CONSULTATIONS

BY

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DISSERTATION

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## Abstract

Chronic pain affects over 50 million American adults and has substantial negative impacts on their health and well-being (Dahlhamer et al., 2018). Patients often rely on advice from health care providers to successfully self-manage their chronic pain (Institute of Medicine, 2011). However, patient–provider communication and relationships are often challenging in the context of chronic pain management (Thompson & Pulido, 2022), and how providers’ communication impacts patients’ evaluation and implementation of self-management advice has not been theoretically explicated and empirically tested. This dissertation synthesizes advice response theory (MacGeorge, Guntzviller, et al., 2016) and the integrated model of medical advising (Feng et al., 2011) with appraisal theories of emotions and coping (Lazarus, 1991; Tracy & Robins, 2007b) and psychological research on advice-taking (de Hooge et al., 2014; Gino & Schweitzer, 2008) to understand how patients’ trait affect, cognitive appraisals, and emotional responses to advice relate to satisfaction with health care and intentions to implement self-management advice. Results from a cross-sectional survey of 208 American adults with chronic pain indicate (a) patients’ trust in their health care providers is associated with positive evaluations of advice, (b) patients’ emotional responses to advice are associated with more or less satisfaction with health care, and (c) patients’ receptiveness to advice and beliefs that they are capable of performing the advised self-management strategy are associated with intentions to adhere to the advice. Implications for advancing theories of advice message processing and improving chronic pain management practices are discussed.

*Keywords:* chronic pain, patient–provider communication, advice, cognitive appraisal, emotion

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## Chapter 1: Introduction

Between 20–30% of adults in the United States live with chronic pain (Dahlhamer et al., 2018; Institute of Medicine [IoM], 2011), and around 8% of these people report that their pain severely limits their life and work activities (Dahlhamer et al., 2018; Zelaya et al., 2020). The World Health Organization’s (WHO, 2020) *International Statistical Classification of Diseases and Related Health Problems* (11th ed.) defines chronic pain as “a distressing sensory and emotional experience associated with actual or potential tissue damage...that persists or recurs for longer than three months.” For affected individuals, expressing their pain to health care providers (e.g., doctors, nurses, psychologists, physiotherapists; henceforth *providers*) is necessary to obtain aid, but it is also interpersonally challenging. Patients and providers understand chronic pain from different vantage points. Differences between lived experience and medical knowledge often manifest during medical consultations as communicating distance, such as providers discrediting and even blaming patients for their pain (Kenny, 2004; Pryma, 2017; Upshur et al., 2010). Blame is especially likely when patients fail to manage their pain by adhering to medical advice rather than relying on opioids. Nonadherence ultimately undermines treatment efforts and contributes to perceptions of drug-seeking (Bergman et al., 2013; Butow & Sharpe, 2013; IoM, 2011; Upshur et al., 2010).

Blame is uniquely harmful for people with chronic pain because internalizing blame often leads to feeling ashamed, and shame is strongly associated with increased inflammation (Dickerson et al., 2004; Gruenewald et al., 2004). Shame-induced inflammation may compound suffering for people with chronic pain caused by inflammatory disease (e.g., Trindade et al., 2017). Moreover, shame is more prevalent among people with chronic pain compared to healthy controls, predicts increased affective pain intensity (i.e., their pain arouses more intense, negative

emotions), and corresponds with mental defeat, which in turn predicts increased disability (Turner-Cobb et al., 2015). In other words, when providers express blame or criticism to chronic pain patients, they may inadvertently be contributing to increased cognitive, emotional, and physiological distress for over 50 million Americans (Dahlhamer et al., 2018; IoM, 2011). The unintended negative consequences of ineffective communication about chronic pain and its management are a major reason the IoM (2011) has focused recent efforts on enhancing communication practices to better support people living with chronic pain.

Skillful supportive communication can facilitate effective pain management and improve the health outcomes of people managing chronic pain. One of the primary links between supportive communication and health communication is the potential for supportive messages to mitigate the negative health effects of stressful life events (Cohen & Wills, 1985), including the onset and persistence of chronic pain and illness (DeLongis et al., 1982; Folkman et al., 1986; Lazarus, 1974). Substantial bodies of research corroborate the positive impacts social support has on people's long-term health, with effects ranging from psychosocial improvement (see meta-analysis by High & Dillard, 2012; cf. Uchino et al., 2012) to reduced inflammation (see meta-analysis by Uchino et al., 2018; see also Yang et al., 2014), improved sleep (see meta-analysis by de Grey et al., 2018), and consequently decreased risk of developing or exacerbating chronic health problems (de Grey et al., 2018; Uchino et al., 2018; Yang et al., 2014).

Chronic pain self-management advice (henceforth *self-management advice*) is a particularly important form of supportive communication in chronic pain management because it offers diverse alternatives to opioid therapy and can provide patients much-needed guidance about what to do as well as how to think and feel about their chronic pain (see Barlow et al., 2002; Dorflinger et al., 2013; MacGeorge et al., 2004; Matthias, Bair, et al., 2010). For example,

Hoffman et al. (2002) state, “the advice and encouragement of health care providers may be the next step in helping certain individuals understand that they do not have to be ‘superman–superwoman’” (p. 222). There are many types of self-management advice, including but not limited to: advice about exercise or other physical activities, advice about rest and recovery, advice about taking over-the-counter pain medications or dietary supplements, advice about understanding and accepting the reality of chronic pain, and advice about managing challenges that arise throughout the course of treatment (see reviews by Dorflinger et al., 2013; Liddle et al., 2007; Park & Hughes, 2012).

Chronic pain patients report numerous barriers and facilitators to self-management (Bair et al., 2009). For example, the effectiveness of exercise advice is contingent on whether that advice includes a clear exercise plan and accounts for patients’ preferences for type and location of exercise (e.g., group yoga; Reid et al., 2015). Furthermore, patients may reject advice if it does not validate their experiences and include thorough explanation (Fordyce, 1976; McCracken, 1998). In short, patients report that difficult patient–provider interactions inhibit effective self-management, whereas encouraging interactions facilitate self-management (Bair et al., 2009). Pain management literature overall indicates providers should use patient-centered communication to motivate patients to adhere to self-management strategies (Dorflinger et al., 2013).

Despite emphasizing the importance of self-management advice and factors that influence its effectiveness, such as reinforcing advice with actionable plans and encouraging messages (e.g., Bair et al., 2009; Fordyce, 1976; Hoffman et al., 2002), comprehensive guidelines for providers are sparse (cf. Dorflinger et al., 2013). Supportive communication theories are also largely absent from discussions of communication in chronic pain management

literature (cf. Caño & Williams, 2010; see review by Hintz, 2020). Moreover, the process by which people evaluate complex combinations of advice, encouragement, and criticism reported during pain-management consultations has not been fully explicated. Unilaterally treating patient-centered strategies as effective and blame and criticism as ineffective ignores the possibility that certain positive emotions (e.g., pride) may decrease advice utilization, and certain negative emotions (e.g., guilt) may enhance advice utilization (de Hooge et al., 2014). The goal of this dissertation project is to advance both supportive communication theory and chronic pain management practices by explicating and testing a theoretical model of chronic pain patients' self-management advice message processing.

What follows is a theoretical explication (Chapter 2), empirical test (Chapters 3 and 4), and discussion (Chapter 5) of chronic pain patients' responses to self-management advice from providers. That is, patients are advice recipients and providers are advisors throughout this essay. The theoretical model builds on advice response theory (ART; Feng & MacGeorge, 2010; MacGeorge, Guntzviller, et al., 2016) and the integrated model of medical advising (IMMA; Feng et al., 2011) to address patient evaluations of self-management advice received from providers and clinically relevant advice outcomes. More precisely, I use appraisal theories of emotion (Lazarus, 1991; Tracy & Robins, 2007b) to incorporate emotions into an ART and IMMA-based model. I focus on emotions that extant research indicates are common reactions to providers' communication during medical consultations and differently predict advice-taking: psychological reactance (anger), gratitude, shame, guilt, and pride (D'Angelo & D'Angelo, 2018; de Hooge et al., 2014). I also extend dual process theorizing in ART by incorporating recipients' tendencies to experience each emotion (i.e., stable recipient traits other than sex; see Bodie & MacGeorge, 2022; MacGeorge, Guntzviller, et al., 2016).

## Chapter 2: Theoretical Foundations

Advice theories and research generally cluster around three paradigms. The *psychological paradigm* involves experimentally testing how features of the advisor and situation affect advice-taking; the *discourse paradigm* involves interpretive analysis of naturalistic advice conversations; and the *message paradigm* involves connecting recipients' evaluations of the advisor, situation, and message features to advice outcomes (see reviews by Guntzviller, 2018; MacGeorge, Feng, et al., 2016). Because the goal of this dissertation project is to understand patient evaluations of self-management advice, I primarily draw on two extant theories from the message paradigm: ART (Feng & MacGeorge, 2010; MacGeorge, Guntzviller, et al., 2016) and the IMMA (Feng et al., 2011). At the same time, this dissertation project builds out both frameworks by incorporating psychological theories and research that account for emotions people may experience in response to blame and criticism, including psychological reactance, shame, and guilt; and in response to encouragement, such as gratitude and pride.

Despite the central role emotions play in predicting behavior (see Lazarus, 1991; Roseman & Smith, 2001), including but not limited to advice-taking (see Van Swol et al., 2018), emotions have thus far been minimally addressed in ART (cf. Guntzviller & Bigsby, 2020; Paik, 2020). *Emotions* can generally be understood as cognitive, affective, and motivational responses to specific life events that people perceive as having implications for their values, goals, and well-being (see Lazarus, 1991; Nabi, 2010). Put simply, emotions connect what people think, how people feel, and how people behave (e.g., whether people take advice; see de Hooge et al., 2014; Gino & Schweitzer, 2008). In interpersonal interactions (e.g., patient-provider consultations), people often experience *social emotions*, or emotions based on perceived identity and relationship implications of social situations (see Leary, 2000; Tracy & Robins, 2007b). The

emotional responses chronic pain patients likely experience in response to interactions with their health care providers (i.e., psychological reactance, gratitude, shame, guilt, and pride) can be considered social emotions. Yet, research on the role of emotions in advice-taking has been limited in scope to emotions caused by external events, not by advice interactions (e.g., de Hooge et al., 2014; Gino & Schweitzer, 2008). Moreover, emotions include not only temporary state responses to medical consultations in which self-management advice is given, but also *emotional proneness*, or the tendency to experience a specific emotion (e.g., reactance proneness, gratitude proneness). Emotional proneness characteristics can be considered advice recipient stable traits, an understudied component of ART (see Bodie & MacGeorge, 2022; Guntzviller, Wang, et al., 2020; MacGeorge, Guntzviller, et al., 2016). There is ample room to advance communication theories of advice message processing and simultaneously improve understanding of chronic pain patients' self-management advice message processing by accounting for social emotions.

To facilitate integration of social emotions into an ART and IMMA-based model of chronic pain patients' self-management advice message processing, I propose an appraisal model of chronic pain self-management advice processing that parsimoniously synthesizes relevant research. I begin with an overview of both ART and IMMA and articulate how each theory is integrated in the model. I then explain how core assumptions of appraisal theories of emotion—chiefly Lazarus's (1991) cognitive-motivational-relational theory—are compatible with ART and IMMA and warrant supplemental predictions about how patients' state emotions in response to advice conversations relate to advice outcomes and how patients' emotional proneness characteristics (i.e., stable traits) should theoretically alter how they process advice interactions. I focus on a specific set of social emotions: psychological reactance, gratitude, shame, guilt, and

two forms of pride; and the emotional proneness characteristics associated with psychological reactance and gratitude. I next review extant research that links advice message features to social emotions and social emotions to advice outcomes. Finally, I present specific hypotheses and research questions derived from the proposed theoretical model.

Figure 1 visually depicts the theoretical model explicated in this chapter. The model begins with a patient's trust in their health care provider, which will predict how receptive a patient will be to their provider's advice about how to self-manage their chronic pain, which in turn will predict how highly they rate the content and style of messages within a clinical consultation in which their provider offers self-management advice. Messages that typically garner positive emotions are framed as prosocial, whereas messages that often trigger negative emotions are framed as antisocial. Evaluations, or *appraisals*, of the implications various aspects of providers' communication have for patients' emotions and coping will predict what emotional response(s) patients feel following the consultation as well as patients' advice outcomes. The model indicates that each social emotion will have a distinct pattern of relationships with advice outcomes. Finally, patients' stable traits will moderate the extent to which they scrutinize features of messages, strengthening or weakening associations message feature appraisals share with specific emotions and outcomes. Table 1 lists the relevant constructs that belong in each category displayed in Figure 1. I define the constructs and justify the theoretical predictions in the sections that follow.



**Table 1***Constructs in Appraisal Model of Chronic Pain Self-Management Advice Processing*

Advice Antecedents	Advice Message Feature Appraisals	Social Emotions	Patient Traits	Advice Outcomes
<i>Distal Predictor</i>	<i>Advice Content Appraisals</i>	Reactance	Reactance Proneness	Patient Satisfaction
Patient Trust	Efficacy	Gratitude	Gratitude Proneness	Adherence Intentions
<i>Proximal Predictor</i>	Feasibility	Shame	Biological Sex	
Receptiveness	Absence of Limitations	Guilt		
	<i>Prosocial Advice Style Appraisals</i>	Alpha Pride		
	Positive Facework	Beta Pride		
	Negative Facework			
	<i>Antisocial Advice Style Appraisals</i>			
	Positive Face Threat			
	Negative Face Threat			
	Freedom Threat			

**Advice Response Theory**

MacGeorge and colleagues (Feng & MacGeorge, 2010; MacGeorge, Guntzviller, et al., 2016) developed ART to explain the process by which recipients cognitively evaluate and

behaviorally respond to advice messages within supportive conversations. ART proposes that who an advisor is, such as whether they are an expert or trustworthy source of guidance (Feng & MacGeorge, 2010), as well as the quality of an advisor's relationship with the recipient (MacGeorge, Guntzviller, et al., 2016), influence perceptions of advice interactions. Moreover, the theory proposes that recipients assess the following message features when deciding whether to take advice: (a) whether the advice will work to solve their problem (*response efficacy*), (b) whether they are able to perform the advised action (*feasibility*), (c) whether taking the advised action will have drawbacks (presence or *absence of limitations*), (d) whether the advice was framed in a way that made them feel competent and liked (*positive facework*), and (e) whether the advice was framed in a way that respected their freedom to choose how they handle the stressor (*negative facework*). Advice messages that are perceived to have these features should be evaluated as higher quality and are more likely to be implemented.

The proposed model integrates advisor characteristics from ART via *patient trust* in their health care provider. Both advice researchers (e.g., D'Angelo & D'Angelo, 2018; Van Swol et al., 2018) and chronic pain management researchers (e.g., Bair et al., 2009; Dorflinger et al., 2013; Matthias & Bair, 2010) agree that patients' trust in providers may be the single most important predictor of whether they accept and implement medical advice. Additionally, patient trust in providers has previously been conceptualized and measured in ways that incorporate perceptions of providers' expertise and trustworthiness (see Anderson & Dedrick, 1990), both of which should predict improved advice outcomes (see reviews by Bodie & MacGeorge, 2022; MacGeorge, Feng, et al., 2016). At the same time, trust sometimes operates as distal predictor of how recipients evaluate advice, so including a more proximal predictor (e.g., receptiveness)

should improve the predictive utility of the model (see Guntzviller et al., 2019; Guntzviller, Wang, et al., 2020).

Previous studies indicate receptiveness to advice is another important predictor of positive appraisals of advice and advice outcomes in ART. In the present study, *patient receptiveness* is conceptualized as whether patients wanted advice from their providers about how they could manage their pain at the time of the consultation. Drawing on research that links perceptions of expertise to receptiveness and receptiveness to positive impressions of advice messages (Feng & MacGeorge, 2006; MacGeorge et al., 2004), Guntzviller, Wang, et al. (2020) propose receptiveness as mediating relationships between trust and message feature appraisals. The hypothesized relationships were supported in their sample of Hispanic/Latino young adults reporting on exercise advice received from their parents. It is plausible the same pattern will hold true for self-management advice from a health care provider, which may include exercise advice. Receptiveness is accordingly positioned as a mediator between patient trust and message feature appraisals in the proposed model.

I use the phrase *advice content appraisals* to collectively refer to the message content evaluations from ART that are incorporated into the proposed model. These include perceptions of self-management advice response efficacy (does the patient think the advice is an effective way to self-manage pain?), feasibility (is the advice something the patient believes they are capable of doing?), and absence of limitations (does the patient think there will be substantial drawbacks or side effects?; see MacGeorge, Guntzviller, et al., 2016). *Prosocial advice style appraisals* refer to perceptions of both positive facework (does the patient think their provider communicated liking, approval, and competence during the consultation?) and negative facework (does the patient perceive their provider respected their autonomy?). Both types of messages are

ways of affirming another person's social standing (i.e., prosocial), and are labeled this way to reflect their positive associations with positive social emotions discussed later in the chapter.

### ***The Role of Face Threats in ART***

Because ART aims to predict positive evaluations of advice and improved advice outcomes, the original theory minimally addresses the role of face threats in advice interactions. Advice researchers acknowledge that telling someone what to think, feel, or do is inherently face-threatening (see Goldsmith & MacGeorge, 2000; Guntzviller, 2018). However, the theory does not offer explicit guidance about how more overtly face-threatening messages such as the blame, criticism, and hostility chronic pain patients report receiving from their health care providers might affect responses to advice.

Researchers have only recently begun to expand theorizing about face threats in ART. Guntzviller and Bigsby (2020) explicitly tested how *positive face threats*, or messages that communicate disapproval, dislike, or incompetence, and *negative face threats*, or messages that disrespect people's autonomy, impacted people's responses to advice about healthy eating. Findings indicated perceptions of positive face threats, but not negative face threats, were associated with lower behavioral intentions to follow healthy eating recommendations. Per psychological reactance theory (PRT; Brehm & Brehm, 1981), Guntzviller and Bigsby (2020) also assessed *freedom threat* perceptions, or evaluations that a message attempts to make it more difficult for a person to think, feel, or do as they please. PRT specifically proposes freedom threats will lead to cognitive, emotional, and behavioral resistance (Brehm & Brehm, 1981). As predicted, freedom threat perceptions were negatively associated with behavioral intentions in Guntzviller and Bigsby's study. In a study implementing hypothetical scenarios wherein participants received unsolicited advice about taking a job, Paik (2020) reported that perceptions

of negative face threats, but not positive face threats, were negatively associated with ratings of advice usefulness. These studies demonstrate that positive face threats, negative face threats, and freedom threats can all negatively impact behavioral and affective responses to advice.

Importantly, face threats and freedom threats are theoretically distinct but interrelated concepts. Positive and negative face threats are both types of impolite speech acts in everyday interactions that question or challenge people's goals of being perceived as desirable to others (positive face) or independent from others (negative face). Freedom threats are not necessarily speech acts (see Brehm & Brehm, 1981), but are often studied as messages that threaten sanctions if a person does (not) perform a specific behavior (see Quick et al., 2013). Positive face threats are clearly distinguishable from negative face threats and freedom threats: positive face threats reflect perceptions that others' messages affirm a person's wants, goals, or values, and, by extension, their social identity (see Brown & Levinson, 1987), and so do not directly implicate autonomy or freedom of behavior.

The difference between negative face threats and freedom threats is more fine-grained. Negative face threats include a wide range of speech acts, including but not limited to threats that the speaker will instigate social sanctions against the hearer if they do (not) perform a specific behavior (see Brown & Levinson, 1987). When negative face threats explicitly threaten sanctions for (not) performing one specific behavior, negative face threats fit with Brehm and Brehm's (1981) definition of freedom threats (see also Quick et al., 2013). However, there are at least two notable distinctions between negative face threats and freedom threats. First, negative face threats also include speech acts such as suggestions, requests, offers, and promises which might pressure someone to act to uphold or improve their social standing, but do not necessarily indicate that the speaker will instigate negative consequences for the hearer if they do not act

accordingly (Brown & Levinson, 1987). If a provider, for instance, requests a chronic pain patient try walking around the block every day until their next appointment, the patient might perceive that failure to heed this request could mean missing the opportunity to be seen as good patient, but the provider is not explicitly stating that there will be negative consequences if the patient fails to comply. If the provider instead threatens to deprescribe pain medication if the patient fails to comply, that would be more conceptually aligned with freedom threat.

Second, negative face threats do not necessarily focus on a freedom that is valued by the hearer. For example, a provider could suggest that a patient try group yoga classes to manage their chronic pain. The patient might already participate in group fitness classes and might not care whether those classes involve yoga, Pilates, or some other form of exercise. In this situation, the provider has technically threatened the patient's negative face by interfering with their autonomous choice of fitness class or implying they are incapable of correctly choosing the most appropriate pain management strategy on their own (Brown & Levinson, 1987). However, the patient is unlikely to perceive their provider's message as a freedom threat because they do not have a preference among the possible actions they could take (see Brehm & Brehm, 1981). Theoretically, then, it is plausible that freedom threats are always negative face threats, but negative face threats are not always freedom threats.

Although the expected patterns of relationships among face threats and other ART constructs and freedom threats and ART constructs are similar, the present study treats face threats and freedom threats as separate constructs in light of theoretical distinctions (Brehm & Brehm, 1981; Brown & Levinson, 1987) and preliminary evidence that face threats and freedom threats may be empirically distinguishable in health advice contexts (see Guntzviller & Bigsby, 2020). Specifically, the proposed model incorporates *antisocial advice style appraisals*, which

include positive face threat, negative face threat, and freedom threat. Chronic pain patients report that face-threatening messages from providers such as criticism, insults, accusations, and patronizing commands make them feel angry, ashamed, and dissatisfied with care (Pryma, 2017; Upshur et al., 2010). This claim holds true in response to medical advice such as deprescribing opioid pain medication (Glare et al., 2020; Upshur et al., 2010). Thus, it is plausible that face threats and freedom threats function inversely to facework in ART broadly and in chronic pain patients' self-management advice processing specifically. The proposed model reflects these negative associations with patient satisfaction and adherence intentions. Additional relationships between prosocial and antisocial advice style appraisals and patient emotions are detailed later in the chapter in the subsection about advice message features and social emotions.

### ***Dual Processing in ART***

ART also integrates *dual processing*, meaning the theory acknowledges people may place more weight on certain aspects of advice conversations depending on whether they are carefully scrutinizing messages or relying on heuristic cues (Bodie & Burleson, 2008). One important ART proposition based on dual process logic is that advice content evaluations (i.e., efficacy, feasibility, and absence of limitations) have a stronger influence on advice outcomes when recipients are more motivated to process advice messages (e.g., the problem is very serious; Bodie & MacGeorge, 2022). MacGeorge, Guntzviller, et al. (2016) provide evidence that recipient stable traits such as biological sex also moderate the influence of advice content evaluations on outcomes. A recent extension of ART found partial support for the moderating role of advice recipients' motivation in the relationships between advice politeness evaluations (i.e., positive and negative facework) and advice outcomes (Guntzviller et al., 2022). Including moderation between advice politeness evaluations and advice outcomes is consistent with dual

process theorizing, since the theoretical perspective is that message effects are stronger when people carefully process what is said during a supportive conversation, including emotionally supportive messages and not exclusively problem-solving messages (see Bodie & Burleson, 2008). Therefore, the present study operates under the assumption that recipient stable traits moderate associations between both advice content and style appraisals and advice outcomes. I revisit this proposition when I introduce the stable traits of psychological reactance proneness and gratitude proneness later in the chapter.

### **The Integrated Model of Medical Advising**

Feng et al. (2011) drew on both ART and extant theories of health message processing (e.g., Rosenstock et al., 1988; Witte, 1992) to develop the IMMA. The theoretical model connects providers' *communication strategies* (message features as articulated in ART) to patients' *cognitive mediators* (i.e., perceptions of response efficacy, self-efficacy, and lack of limitations or side effects) and clinically relevant *advice outcomes* (i.e., patient satisfaction, adherence intentions). In other words, the IMMA integrates ART with Feng and Burleson's (2008) work linking advice message features to advice evaluations and applies ART-consistent predictions to advice from clinicians during consultations with patients.

The IMMA is accounted for in the proposed theoretical model in three main ways. First, I incorporate cognitive mediators and outcomes from the IMMA. Assessing patients' perceptions of response efficacy, self-efficacy, and absence of limitations is consistent with both IMMA and ART. However, I use the term *feasibility* rather than self-efficacy because it connotes self-efficacy for performing a specific advised action(s) rather than global perceptions of being a capable person. I also adopt the two advice outcomes proposed in the IMMA—patient satisfaction and adherence intentions—because they are tailored to medical contexts. These two

outcomes are parallel to conversation satisfaction and implementation intentions in ART (see Guntzviller, MacGeorge, et al., 2017; Guntzviller et al., 2019).

Second, in line with the IMMA, the present study acknowledges that appraisals of advice messages features are informed by multiple messages within advice-containing consultations. From a practical standpoint, advice can happen over multiple turns of a conversation (Guntzviller, 2018). Although advice content appraisals are specific to conversational turns that contain advice or directly reference advice (e.g., appeals to response efficacy, feasibility, and absence of limitations; Feng & Burleson, 2008), prosocial and antisocial advice style appraisals may be related to other turns in an advice conversation that do not necessarily contain advice (e.g., Guntzviller, Liao, et al., 2020; Guntzviller, Pulido, et al., 2020). This suggests assessments of prosocial and antisocial messages during a clinical consultation—not necessarily in the turn(s) when advice is given—may still impact advice outcomes (see also Feng, 2009 for a discussion of how other messages in a conversation affect how advice is perceived). Accordingly, advice style appraisals in the present study do not only include perceptions of how advice messages are framed but also perceptions of stylistic features of providers' communication throughout a self-management advice-containing consultation.

Third, I omit one key concept from the IMMA and ART based on Feng et al.'s (2011) findings: problem seriousness. Although problem seriousness may modulate the effects of advisor and message features on advice outcomes (see Bodie & MacGeorge, 2022), it is not an appropriate construct for the chronic pain context. Drawing on over 200 clinical consultations, Feng et al. (2011) speculated that “many of the conditions under treatment were chronic, suggesting that patients might have considerable experience with them and may have known much about their seriousness” (p. 293). It follows that people with chronic pain who are

consulting their provider for assistance have likely already acknowledged that their situation is severe enough to warrant medical attention. In other words, having received chronic pain self-management advice from a provider likely means the pain was intense or disruptive enough that a provider had occasion to proffer advice, even if a chronic pain patient was to receive self-management advice during a routine consultation. For this reason, problem seriousness is assumed in the present study. All other major elements of ART and IMMA are represented in the model. The only remaining components of the model to be accounted for are state and trait emotions. To incorporate emotions into this ART and IMMA-based model, I expand both theories by applying appraisal logic, connecting advice message features to emotions, and linking emotions to advice outcomes.

### **Appraisal Logic in ART and IMMA**

Lazarus's (1991) cognitive-motivational-relational theory—often simply referred to as appraisal theory—is one of many appraisal theories of discrete emotions that aim to differentiate emotional states (e.g., anger, fear) based on the cognitions that cause them (see Roseman & Smith, 2001 for a review). Lazarus's theory explicates the causal processes that drive many theories supportive communication (see Bodie & Jones, 2014; Burleson & Goldsmith, 1996; Holmstrom, 2016). More precisely, Lazarus (1991) maintains that people respond to life events by evaluating certain aspects of their environment—including other people and available coping resources—to determine whether an event is stressful, uplifting, or irrelevant to their well-being (see also DeLongis et al., 1982; Lazarus, 1974). This process of cognitive appraisal is filtered through the lens of who a person is and how they think, such as personality traits, goals, values, and identities (e.g., patient traits). Events therefore do not have inherent meaning, but rather must be appraised to hold any meaning for a particular person. Emotions and the events that trigger

them are viewed as transactions: changes in the environment affect a person, and a person's behavior can change their environment. As events unfold over time, there are many opportunities for people to adjust their thoughts, feelings, and actions to facilitate coping; this process is known as *reappraisal*. By extension, people can feel multiple emotional responses to the same event at the same time as they evaluate different aspects of the situation (see also Lazarus & Folkman, 1984, 1987).

The logic of appraisal theories is highly compatible with ART and helps contextualize advice conversations within the larger context of coping with health-related stressors such as chronic pain. Because advice is conceptualized as a form of supportive communication, it is presumed that the recipient is distressed and in need of assistance with a problem (e.g., chronic pain; see MacGeorge et al., 2011). Advice messages and conversations specifically contain recommendations about ways of coping with a problem by changing thoughts, feelings, or actions (MacGeorge et al., 2004; MacGeorge & Van Swol, 2018). Based on this definition, advice messages are motivated by the goal of facilitating reappraisal by resolving the underlying problem or changing how someone views the situation in relation to their goals so it is no longer appraised as stressful (see Jones & Koerner, 2016; Lazarus, 1991; MacGeorge et al., 2019). Advice may be well-received and facilitate coping if the advice recipient views the advisor as a reliable source of help and their recommendation as a practical way to solve their problem (e.g., chronic pain) or manage their stress and emotions (i.e., problem-focused or emotion-focused coping; Lazarus, 1991; see also Dorflinger et al., 2013; Hoffmann & Tarzian, 2001). Thus, appraisal theory accounts for both the mechanism and components of contemporary theories of advice message processing: qualities of the source, recipient, and situation influence how

supportive messages are appraised (e.g., D'Angelo & D'Angelo, 2018; Feng & MacGeorge, 2010), which in turn influences cognitive, emotional, and behavioral outcomes.

Although ART and IMMA have many strengths, both theories have limitations from an appraisal perspective, at least two of which are pertinent to the goal of understanding patients' appraisals of self-management advice and subsequent outcomes. First, appraisal theory highlights how advice can elicit emotional reactions, yet ART does not explicitly theorize about the role of recipients' emotional states during advice conversations and subsequent reflection and decision-making. Both appraisal theorizing and psychological advice research indicate that certain emotions predict better or worse advice outcomes (e.g., whether recipients utilize advice; see review by Van Swol et al., 2018). Second, individuals can appraise the same advice in different ways depending on their personality, including and importantly the tendency to respond to similar situations with the same emotional response(s) (i.e., emotional proneness). Previously investigated recipient characteristics have largely been limited to sex (e.g., MacGeorge, Guntzviller, et al., 2016) and cultural differences (e.g., familial obligation; Guntzviller, Wang, et al., 2020). Researchers have yet to assess the role of emotion-specific characteristics. To address both limitations, the next section explores the potential roles of six state emotions and two emotional proneness characteristics in advice conversations broadly and chronic pain management consultations in particular.

## **Social Emotions in Advice Interactions**

### ***What Are Social Emotions?***

In the social world, people not only experience *basic emotions* that reflect met or unmet needs, such as anger, fear, surprise, or happiness (Ekman, 1999), but also experience social emotions when people reflect on their own and others' roles in a stressful or supportive situation

(Leary, 2000; Tracy & Robins, 2007b). Tracy and Robins (2007b) expand Lazarus's framework to incorporate social emotions which are triggered by challenged or upheld identity goals. Certain emotions—such as shame, guilt, and pride—only exist in the social world: they emerge out of perceptions that other people view a person positively or negatively (Tangney, 1999; Tangney & Dearing, 2002; Tracy & Robins, 2007b). For this reason, shame, guilt, and pride are also referred to as self-conscious emotions (see Tangney, 1999). Basic emotions can also be social emotions when, for example, the cause of anger or anxiety is another person's (anticipated) actions (see Leary, 2000). By extension, psychological reactance (henceforth *reactance*) to advice messages, which is measured as a combination of anger and negative cognitions (Dillard & Shen, 2005), can be considered a specific case of social anger triggered by messages that threaten people's freedom (see also Brehm & Brehm, 1981; Quick et al., 2015).

Social emotions are absent from the IMMA and have not been thoroughly integrated into ART. Recent studies have begun incorporating social emotions into ART but are thus far limited to two social emotions: reactance and shame. Because reactance is a form of social anger, recent advice research investigating reactance to advice messages has technically begun to incorporate social emotions into ART (Dorrance-Hall et al., 2021; Guntzviller & Bigsby, 2020; Paik, 2020). Dorrance-Hall et al. (2021) link perceptions of face threats in advice interactions to reactance, but do not overtly test ART. Guntzviller and Bigsby (2020) explicitly synthesize ART with PRT and link perceptions of face threats and freedom threats in advice messages to reactance. Paik (2020) mentions both reactance to advice and shameful feelings in response to advice but does not offer clear guidance about differences between these two social emotions (see Nabi, 2010; Tracy & Robins, 2007b). More specifically, Paik (2020) does not (a) theorize about reactance and shame separately, but rather treats all negative emotions as functionally identical; (b)

measure reactance as a combination of anger and negative cognitions as recommended by Dillard and Shen (2005); nor (c) use a validated measure of shame that is sensitive to differences between shame and similar feelings such as guilt and embarrassment (see Tangney, 1999; Tangney & Dearing, 2002). All three aforementioned studies also limit predictions to antisocial advice style appraisals (i.e., positive and negative face threat) but do not link advice content appraisals (i.e., response efficacy, feasibility, absence of limitations) to emotions. These extant studies provide some empirical evidence linking message feature appraisals, social emotions, and advice outcomes in ART, but are incomplete in their explication of the unique roles specific social emotions may play in people's responses to advice. Moreover, despite the emphasis ART places on perceptions of high-quality advice promoting improved advice outcomes, extant tests of ART have not accounted for positive emotions in response to advice messages.

To address the current limitations of ART and IMMA regarding emotional responses to advice, I integrate three related pairs of social emotions: reactance and gratitude, shame and guilt, and alpha pride and beta pride (see Tangney, 1999). I focus on this set of emotions for three primary reasons. First, de Hooge et al. (2014) previously found that anger, gratitude, shame/guilt, and pride each had unique influences on advice-taking. Such research can be refined by empirically distinguishing between shame and guilt and the two types of pride (Tangney, 1999; Tracy & Robins, 2007a). Second, all six emotions have been reasonably well-explicated, so extant knowledge is readily available to guide theoretical predictions. Third, and perhaps most importantly, these emotions capture plausible reactions to prosocial messages from providers, such as compliments and encouragement (i.e., gratitude, alpha pride, beta pride); as well as antisocial messages from providers, such as blame and criticism (i.e., anger, shame, guilt). The emotions are logically paired based on appraisal dimensions: reactance and gratitude are both

other-focused with opposite valences, shame and guilt are both self-focused and negative, and alpha and beta pride are both self-focused and positive (see de Hooge et al., 2014; Tracy & Robins, 2007b). In the sections that follow, I describe each emotional state, elaborate how messages in advice interactions should theoretically predict state emotions, and address how state emotional responses may affect advice utilization. I close by introducing trait variations of reactance and gratitude and their potential to systematically bias advice message processing.

### ***Reactance and Gratitude***

Anger and gratitude are similar insofar as they are other-focused but are differentiated by the perception that another person's actions caused a negative or positive outcome, respectively. In advice contexts, social anger is likely to take the specific form of reactance (D'Angelo & D'Angelo, 2018; Dillard & Shen, 2005; Guntzviller & Bigsby, 2020). Reactance has been found to occur when a health message tells people what they should or should not do, think, or feel, and people respond with negative thoughts and angry affect (see Dillard & Shen, 2005; Quick et al., 2013), including patients receiving medical advice (see D'Angelo and D'Angelo, 2018 for a review). When other people (e.g., providers) and their messages about one's behavior are the causes of reactance, reactance fits the definition of a social emotion (see Leary, 2000). Reactance motivates people to resist influence and restore their freedom, often by doing the opposite of what is recommended (Quick et al., 2013). Accordingly, one goal of effective health advice is to mitigate reactance (e.g., using facework; Guntzviller & Bigsby, 2020).

Positive emotions such as gratitude have received comparatively less attention in persuasion and advice research, but evidence indicates gratitude may be beneficial in advice interactions (e.g., Belkin & Kong, 2018; Gino & Schweitzer, 2008). Gratitude is a positive counterbalance to reactance. Whereas reactance involves blaming another person for a threat or

harm to a person's freedom, gratitude is characterized by crediting another person for a benefit (see Lazarus, 1991, 2006). People experiencing gratitude recognize that they have gained opportunities or resources because of another person's kindness and are motivated to accept others' influence and reciprocate goodwill (McCullough et al., 2001). In short, whether someone evaluates advice as more threatening or valuable may mean the difference between experiencing reactance or gratitude and accepting or rejecting advice (see Gino & Schweitzer, 2008; Lazarus, 2006).

### ***Shame and Guilt***

Shame and guilt are commonly reported by chronic pain patients, including in response to self-management advice from their providers. Shame and guilt are negative, self-focused emotions that share the general appraisal pattern, "I did that horrible thing." However, as Tangney (1999) explains:

...shame involves a negative evaluation of the global self; guilt involves a negative evaluation of a specific behavior. Although this distinction may, at first glance, appear rather subtle, this differential emphasis on self ("I did that horrible thing") vs. behavior ("I did that horrible thing") leads to very different phenomenological experiences. (p. 545; emphasis in original)

Despite this theoretical and practical distinction between shame and guilt being widely accepted among emotion experts, laypersons and scholars alike may fail to differentiate shame and guilt (Tangney, 1999). This may be, in part, because guilt and shame are often concurrently experienced: people can feel bad about the thing they did and feel the thing reflects poorly on their character. However, social emotion research reveals shame and guilt produce markedly different behavioral responses. Shame involves feeling small or worthless and accordingly

encourages people to withdraw from social situations. Guilt, in contrast, motivates people to repair the damage caused by their initial actions (Tangney, 1999; Tangney & Dearing, 2002; Tracy & Robins, 2007b). The difference between shame and guilt may equate to the difference between avoiding or implementing advised actions.

### ***Alpha Pride and Beta Pride***

Tangney (1999) also differentiates two types of pride that parallel shame and guilt. Alpha pride, also known as hubristic pride (Tracy & Robins, 2007a), involves stable, positive, uncontrollable attributions about oneself. Beta pride (Tangney, 1999), or authentic pride (Tracy & Robins, 2007a), emerges when people focus on unstable, positive, controllable attributions about their behavior. Another way to think about the difference between alpha and beta pride is that alpha pride reflects the belief that someone is good person, whereas beta pride involves an evaluation that someone did a good thing. Recent research on behavioral correlates of alpha and beta pride reveals alpha pride corresponds with social dominance and aggression, whereas beta pride relates to self-control and goal achievement (Carver & Johnson, 2010). It is plausible that alpha pride may play a negative role in advice interactions (e.g., by garnering dislike from the advisor and leading recipients to discount advice; see Tangney, 1999; Tracy & Robins, 2007a), whereas beta pride may play a positive role in advice interactions (e.g., by garnering liking from the advisor and leading recipients to implement advice that achieves their goals; see Williams & DeSteno, 2009).

### ***Advice Message Features and Social Emotions***

Although not explicitly addressed in ART, extant theory and research indicate messages commonly reported during advice interactions may elicit social emotions. According to Tracy and Robins (2007b), social emotions often arise out of identity threats. Earlier research upon

which ART is built acknowledges that advice conversations are inherently face-threatening (Goldsmith & MacGeorge, 2000). The act of giving advice may call into question if a recipient is competent enough to manage their own problem (positive face threat) and impinge on their autonomy by telling them how to solve the problem (negative face threat; see P. Brown & Levinson, 1987). In both cases, advice recipients' social image is presumably tarnished in the eyes of the advisor and potentially others. Guntzviller and Bigsby (2020) recently made this logic more explicit by testing if face-threatening language might lead advice recipients to experience reactance to advice. Findings indicated that both positive and negative face-threatening language predict reactance to health advice, and perceptions of positive face threat and freedom threat mediate these relationships. It is also plausible that positive face-threatening messages which communicate dislike or criticize an advice recipient's current handling of the problem could elicit shame and guilt (Tangney, 1999; Tangney & Dearing, 2002; Tracy & Robins, 2007b). Quick et al. (2015) also previously linked guilt to freedom threat perceptions in response to persuasive messages recommending people register as organ donors. Similarly, Paik (2020) links face threats to feelings of shame, rejection, and humiliation. Thus, reactance, shame, and guilt are all plausible recipient responses to face threats and freedom threats during advice interactions.

ART emphasizes how advice conversations can help recipients feel better about themselves and more capable of managing their problems. Positive and negative facework serve exactly these functions: positive facework helps people feel better about themselves (e.g., liked, approved of, competent), and negative facework helps people feel in control (e.g., by respecting autonomy and free choice; P. Brown & Levinson, 1987). Yet, ART does not explicitly include positive emotions as responses to advice messages. Extant studies have only employed global

measures of affective improvement such as facilitation of coping (e.g., MacGeorge, Guntzviller, et al., 2017). One plausible option is that people respond to helpful advice from others with gratitude. People commonly end advice conversations and clinical consultations by saying, “Thank you!” (e.g., Belkin & Kong, 2018). It follows that people are probably experiencing emotional gratitude when they express gratitude (McCullough et al., 2001, 2002). ART also emphasizes the importance of recipients’ self-efficacy for implementing advice (i.e., feasibility; Feng & MacGeorge, 2010) and, by extension, self-efficacy for managing their original problem or stressor (e.g., chronic health condition; Feng et al., 2011). This combination of politeness and self-efficacy enhancements could very well induce pride—both alpha and beta varieties (Tangney, 1999; Tracy & Robins, 2007b). For example, telling a patient they “do not have to be ‘superman–superwoman’” implies the patient has been working very hard to manage their pain and could induce pride (see Hoffman et al., 2002, p. 222). Therefore, gratitude and pride are plausible reactions to face-affirming messages in advice interactions.

Based on this extant literature, the proposed model reflects: (a) positive associations between prosocial advice style appraisals (i.e., positive and negative facework) and positive social emotions (i.e., gratitude, alpha pride, beta pride), (b) positive associations between antisocial advice style appraisals (i.e., positive and negative face threat, freedom threat) and negative social emotions (i.e., reactance, shame, guilt), (c) negative associations between antisocial advice style appraisals and positive social emotions, and (d) negative associations between prosocial advice style appraisals and negative social emotions. Previous studies have not explicitly tested connections between advice content appraisals (i.e., response efficacy, feasibility, and absence of limitations) and social emotions, and the relationships likely vary for each unique emotion rather than being consistently predicted based on positive or negative

valence. Therefore, I introduce relationships between advice content appraisals and each specific social emotion in the final subsection of the chapter that contains iterations of the theoretical model for each emotion. Before introducing the emotion-specific models, I next establish relationships between each social emotion and advice outcomes and discuss the moderating roles of reactance proneness and gratitude proneness.

### ***Social Emotions and Advice-Taking***

Advice researchers have previously documented systematic variation in advice outcomes that may be parsimoniously predicted by appraisal dimensions shared by certain social emotions, such as valence (positive or negative) and agency (self or other; see de Hooge et al., 2014; Gino & Schweitzer, 2008). Thus, the anger, gratitude, shame, guilt, and pride reported by chronic pain patients in response to their providers' communication may influence whether they adhere to providers' recommendations (Bair et al., 2009; Butow & Sharpe, 2013). In this section, I reinterpret extant findings to address how the aforementioned pairs of social emotions should theoretically have equal-and-opposite effects on advice-taking (de Hooge et al., 2014; Gino & Schweitzer, 2008). I also pinpoint how valence and agency may be sufficient to predict advice-taking for other-focused emotions (reactance, gratitude), but are insufficient to differentiate the potential effects of self-conscious emotions (shame, guilt, alpha pride, beta pride).

Advice researchers posit that negative, other-focused emotions such as reactance predict decreased advice utilization. In contrast, advice researchers theorize that positive, other-focused emotions such as gratitude predict increased advice utilization. Two sets of experiments empirically support these predictions (de Hooge et al., 2014; Gino & Schweitzer, 2008). Although these experiments investigated anger—not reactance—the anger manipulation in de Hooge et al. (2014) was another person preventing participants from earning a prize by

answering a question incorrectly. At face value, it sounds like a specific freedom (i.e., the opportunity to earn a prize) was eliminated by another person. Therefore, anger could indicate reactance (see Brehm & Brehm, 1981). Moreover, Guntzviller, Ratcliff, et al. (2017) previously suggested reactance may negatively impact exercise advice-taking, and Guntzviller and Bigsby (2020) link reactance to decreased behavioral intentions for implementing nutrition advice. Thus, it appears positive or negative valence may be sufficient information to predict advice utilization when the social emotion is other-focused.

Self-conscious emotions, including shame and guilt and alpha and beta pride, yield conflicting predictions concerning advice outcomes that cannot be sufficiently explained by valence and agency. Rather, these emotions require attention to attributions of controllability and stability (Tracy & Robins, 2007b). de Hooge et al. (2014) did not differentiate shame and guilt in their study assessing the impact of social emotions on advice outcomes. The researchers claim to have measured shame, but there is no clear indication of whether participants focused on internal, stable, uncontrollable attributions about themselves (i.e., shame) or external, unstable, controllable attributions about their behavior (i.e., guilt) because the measure employed descriptive adjectives rather than specific questions about how participants appraised the situation (see Tangney & Dearing, 2002; Tracy & Robins, 2007b). de Hooge et al.'s (2014) findings therefore suggest shame *or* guilt might lead to increased advice utilization, but it cannot be said with confidence which emotion predicted this outcome in their study.

Based on extant research about self-conscious social emotions (Tangney, 1999; Tangney & Dearing, 2002; Tracy & Robins, 2007b), shame and guilt should have opposite effects on advice-taking. Shame involves feeling small, worthless, and powerless. Ashamed people feel nothing can be done about a personal flaw, so they are motivated to avoid the situation. If advice

recipients believe nothing can be done, no advice will be good enough in their eyes, so they should theoretically be less likely to take advice. Guilty people, in contrast, feel bad about a specific action they performed and should be motivated to repair damage and continue engaging in the situation to make things right. This means guilt should increase advice utilization.

Although shame and guilt cannot necessarily be distinguished by the situation that caused them (see Tangney, 1999), the experiment employed by de Hooge et al. (2014) induced shame/guilt by making participants fail at a low-stakes task that they were unlikely to take personally. So, it is more plausible that de Hooge et al.'s findings can be attributed to guilt—rather than shame—motivating advice-taking.

de Hooge et al. (2014) also did not differentiate alpha and beta pride in their analyses, and it is similarly probable that the negative influence of pride on advice-taking stems from alpha pride, whereas beta pride may predict increased advice utilization (e.g., if the advised action is appraised as a means to achieve beta pride-congruent goals; Carver & Johnson, 2010; Williams & DeSteno, 2009). People experiencing alpha pride are motivated to dominate others and assert their social status (Tangney, 1999; Tracy & Robins, 2007a). In a competitive context such as de Hooge et al.'s experiment, alpha pride could have motivated people to disregard others' input (i.e., advice) because they were suspicious of others' intentions or wanted to claim exclusive credit for their own victory. Beta pride, in contrast, should have motivated people to focus on the task at hand and attend to advice that helped them achieve their goal. It is therefore conceivable that de Hooge et al.'s predictions about the negative influence of pride are explained by alpha pride, whereas beta pride may enhance advice-taking.

### ***The Role of Emotional Proneness in Advice Interactions***

In addition to emotional states, people are also conceptualized as having trait-like tendencies to experience certain emotions, discussed here as emotional proneness characteristics, but reflected in the model under the category of *patient traits* (including but not limited to emotional proneness). The present study extends ART and IMMA by investigating the role of two emotion-specific patient traits in advice message processing: reactance proneness and gratitude proneness. Advice recipient traits are a generally under-investigated component of ART (Bodie & MacGeorge, 2022), and emotional proneness characteristics have not been investigated in extant tests of ART. D'Angelo and D'Angelo (2018) limit their discussion to the role of reactance proneness in medical advice-taking (see also Hong & Faedda, 1996), but Náfrádi et al. (2018) more broadly implicate chronic pain patients' trait affect as influencing responses to advice from providers. Advancing ART and explicating chronic pain patients' advice appraisal processes therefore requires attention to additional patient traits such as reactance and gratitude proneness.

As an initial test, the present study incorporates *reactance proneness*, or the tendency to experience reactance in response to social influence attempts (see Hong & Faedda, 1996), and introduces its prosocial counterpart, *gratitude proneness*, or the tendency to look for reasons to be grateful for others' actions (see McCullough et al., 2002). Both qualities should act as a subconscious filter through which the advice interaction (medical consultation) is interpreted (see Lazarus, 1991 for a discussion of unconscious appraisal processes). People with high reactance proneness generally report that they do not like when others try to influence them or give them advice (Hong & Faedda, 1996). Thus, reactance prone people may place more weight on negative evaluations of advice interactions (e.g., perceived freedom threat). Contrarily, gratitude proneness (also referred to as dispositional gratitude) is marked by the tendency to find

reasons to be grateful for others (e.g., external attributions) and for the world and life more broadly (McCullough et al., 2002). Put simply, grateful people may view advice conversations through rose-colored glasses and prioritize positive evaluations.

From a dual process standpoint (Bodie & Burlison, 2008; Bodie & MacGeorge, 2022), emotional proneness characteristics, similar to other advice recipient traits, should motivate patients to more closely attend to certain message features during consultations and consequently respond to advice in emotion-congruent ways (i.e., moderate the influence of message features on emotions and outcomes; Bodie & MacGeorge, 2022; see also Nabi, 1999). For this reason, the proposed model conceptualizes reactance proneness and gratitude proneness as strengthening positive associations and weakening negative associations between advice message feature appraisals and their respective state emotions. Based on ART theorizing, these moderating effects should also extend to relationships between message feature appraisals and advice outcomes. These connections are also reflected in the proposed model. In the proceeding section, I articulate specific hypotheses and research questions based on the model, including hypotheses and research questions that more thoroughly investigate these potential moderating effects.

### **Hypotheses and Research Questions**

This section translates the proposed conceptual model into specific hypotheses and research questions. Although I occasionally use predictive or causal language in this section to reflect theoretical causality proposed in ART, IMMA, and appraisal theories, all hypotheses and research questions use correlational language because there is insufficient evidence in the literature to support causal predictions in the context of chronic pain patients' self-management advice message processing. The first set of hypotheses and research questions reflects ART and IMMA-consistent predictions that patient trust in their provider predicts receptiveness to advice

(Guntzviller, Wang, et al., 2020); which then predicts advice content and style appraisals; which finally predict patient satisfaction and adherence intentions. Negative relationships between ART-consistent constructs and antisocial advice style appraisals are added based on Guntzviller and Bigsby (2020) and the reports of chronic pain patients (Bair et al., 2009; IoM, 2011; Upshur et al., 2010). That is, trust and receptiveness should negatively predict antisocial advice style appraisals, which negatively predict all advice outcomes. Trust and receptiveness to advice may also exert direct effects on advice outcomes (see Guntzviller, Wang, et al., 2020; MacGeorge, Guntzviller et al., 2016), or their influence may be mediated by advice content and style appraisals. Subsequently, advice content appraisals and prosocial advice style appraisals should positively predict advice outcomes, whereas antisocial advice style appraisals should negatively predict advice outcomes. It follows that:

H1: Patient receptiveness mediates the associations that patient trust shares with (a) advice content appraisals and (b) prosocial advice style appraisals, such that patient trust is positively associated with patient receptiveness and patient receptiveness is positively associated with advice content appraisals and prosocial advice style appraisals.

H2: Patient receptiveness mediates the associations that patient trust shares with antisocial advice style appraisals such that patient trust is positively associated with receptiveness and receptiveness is negatively associated with antisocial advice style appraisals.

RQ1: Is patient trust directly related to advice message feature appraisals, or only indirectly as mediated by receptiveness?

H3: (a) Advice content appraisals and (b) prosocial advice style appraisals are positively associated with advice outcomes.

H4: Antisocial advice style appraisals are negatively associated with advice outcomes.

RQ2: Are (a) trust and (b) receptiveness directly associated with advice outcomes, or only indirectly as mediated by advice message feature appraisals?

Next, I present iterations of the proposed model (Figures 2–7) specific to each social emotion of interest (i.e., reactance, gratitude, shame, guilt, alpha pride, beta pride). Each model addresses unique predictions between advice message feature appraisals, one specific emotion, and advice outcomes. One set of predictions holds true in all the following models. Advice researchers note that dimensions of emotions, such as valence, can systematically account for advice outcomes (de Hooge et al., 2014; Gino & Schweitzer, 2008). Although valence is insufficient for predicting behavioral responses to advice (i.e., adherence intentions), it may be sufficient to predict affective responses to advice. All positive emotions (gratitude, alpha pride, beta pride) should positively predict patients' satisfaction with the consultation, and all negative emotions (reactance, shame, guilt) should negatively predict patients' satisfaction. I include hypotheses based on these consistent predictions, but narratively focus on unique predictions for each emotion. In all models, I include the action tendency for each emotion in parentheses to clarify behavioral predictions for readers. In the reactance and gratitude models, the moderating role of each corresponding emotional proneness characteristic is visually indicated, but relevant hypotheses are presented at the end of the chapter alongside patient sex as an additional moderator from extant ART research.

**Figure 2**

*Reactance Model*

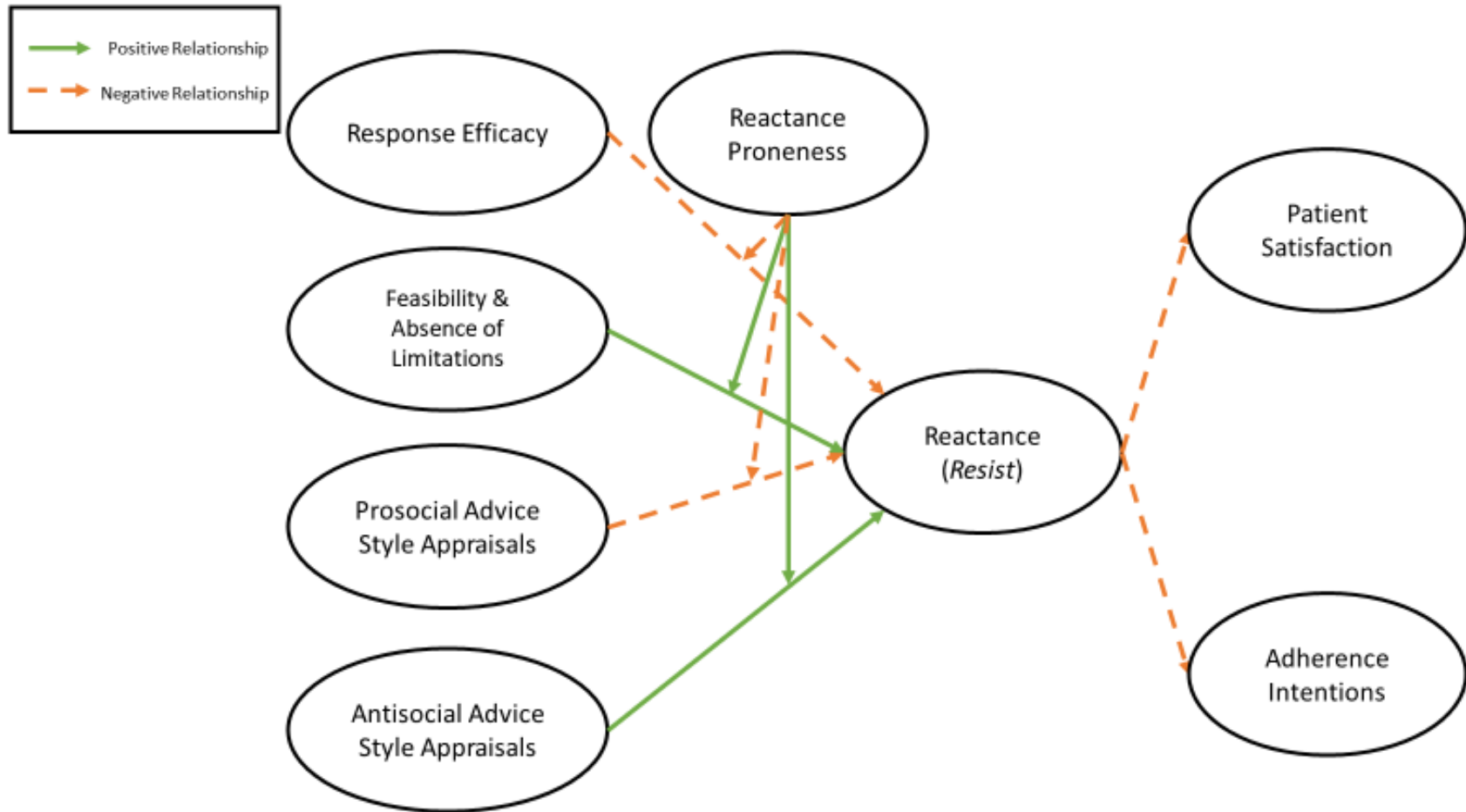


Figure 2 displays predictions concerning reactance. Theoretically, advice messages that threaten freedom by telling patients how they should change their behavior to manage their pain are likely to induce reactance (Brehm & Brehm, 1981; D'Angelo & D'Angelo, 2018; Quick et al., 2013). Because both negative face threats and freedom threats impede upon free choice, both message style appraisals should positively predict reactance. Additionally, previous research on responses to health advice has linked positive face threats to reactance (Dorrance-Hall et al., 2021; Guntzviller & Bigsby, 2020; Paik, 2020). This generally means that antisocial advice style appraisals should exacerbate reactance, whereas prosocial advice style appraisals should mitigate reactance. Guntzviller, Ratcliff, et al. (2017) suggest advice content appraisals may yield discrepant effects on reactance. That is, reports from young adults about exercise advice from their parents yielded positive associations between response efficacy and outcomes, but negative relationships between both feasibility and absence of limitations and outcomes, enhanced by feelings of obligation toward their parents. Guntzviller, Ratcliff, et al. posit these boomerang effects may be explained by reactance, but they did not measure reactance. The present study draws on their findings and more explicitly tests differential associations with reactance between response efficacy versus feasibility and absence of limitations. Reactance should also motivate decreased adherence intentions (Guntzviller, Ratcliff, et al., 2017; Quick et al., 2013). The following hypotheses account for these predictions:

H5: (a) Response efficacy and (b) prosocial advice style appraisals are negatively associated with reactance.

H6: (a) Feasibility, (b) absence of limitations, and (c) antisocial advice style appraisals are positively associated with reactance.

H7: Reactance is negatively associated with advice outcomes.

**Figure 3**

*Gratitude Model*

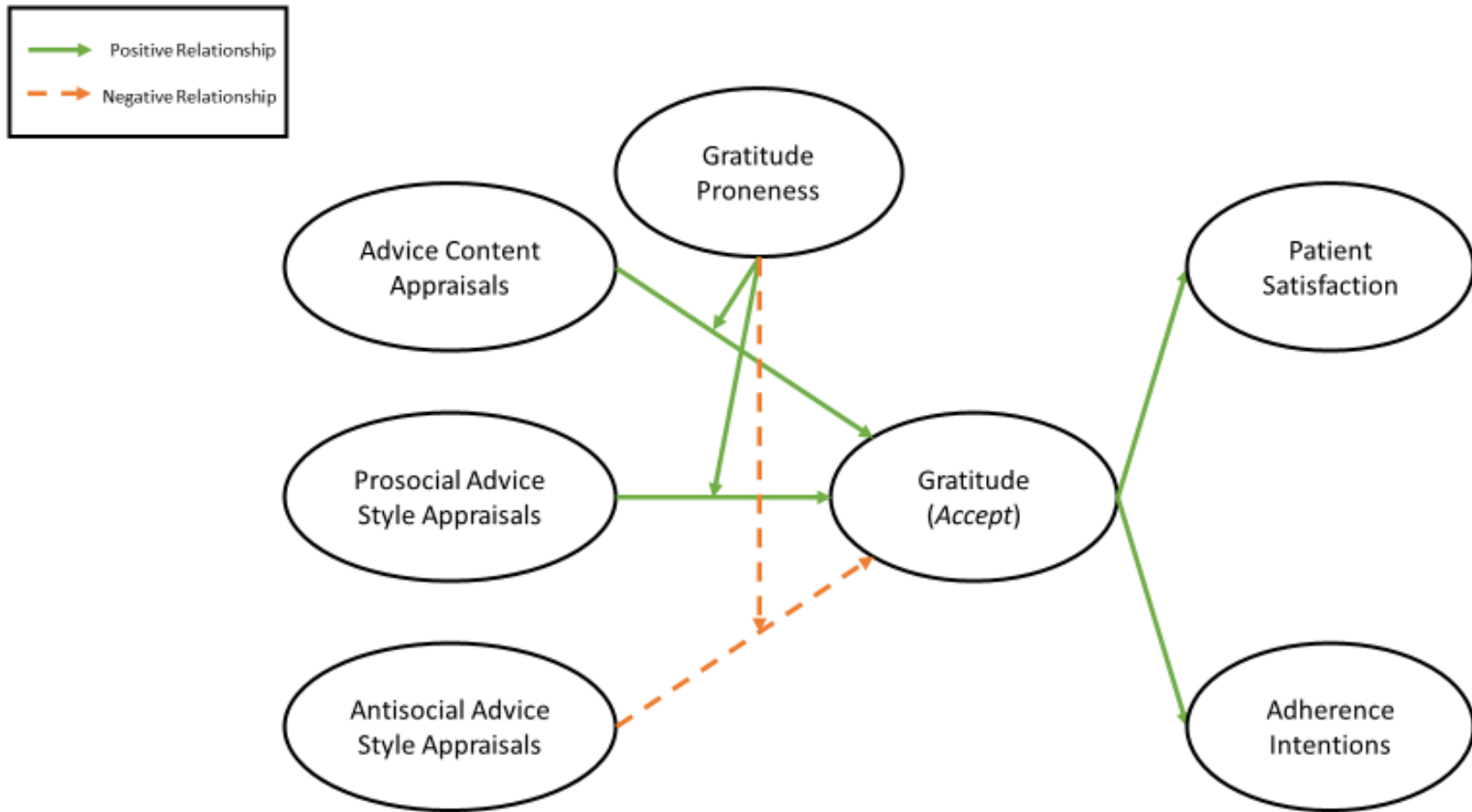


Figure 3 illustrates propositions regarding gratitude. In contrast to reactance, perceptions that advice contains an effective and actionable way to manage pain (i.e., advice content appraisals) and is delivered in a respectful or complimentary way (i.e., prosocial advice style appraisals) should induce gratitude. Put differently, perceptions of high-quality advice content are congruent with patients' goals of managing their pain effectively (Lazarus, 1991), and perceptions of polite and encouraging messages within advice conversations align with face-related goals and are documented as messages patients appreciate (Bair et al., 2009; P. Brown & Levinson, 1987). Moreover, the provider's actions are the catalyst for positive emotion, matching the primary appraisal pattern for gratitude (i.e., another person is credited with helping achieve a goal; Lazarus, 1991; McCullough et al., 2001). Patients are unlikely to be thankful for (and likely to be offended by) criticisms, insults, or otherwise disrespectful communication (Pryma, 2017; Upshur et al., 2010), so antisocial advice style appraisals should correspond with lower gratitude ratings. Gratitude motivates people to accept and reciprocate others' kindness, which translates to increased adherence intentions (e.g., Gino & Schweitzer, 2008). Accordingly:

H8: (a) Advice content appraisals and (b) prosocial advice style appraisals are positively associated with gratitude.

H9: Antisocial advice style appraisals are negatively associated with gratitude.

H10: Gratitude is positively associated with advice outcomes.

**Figure 4**

*Shame Model*

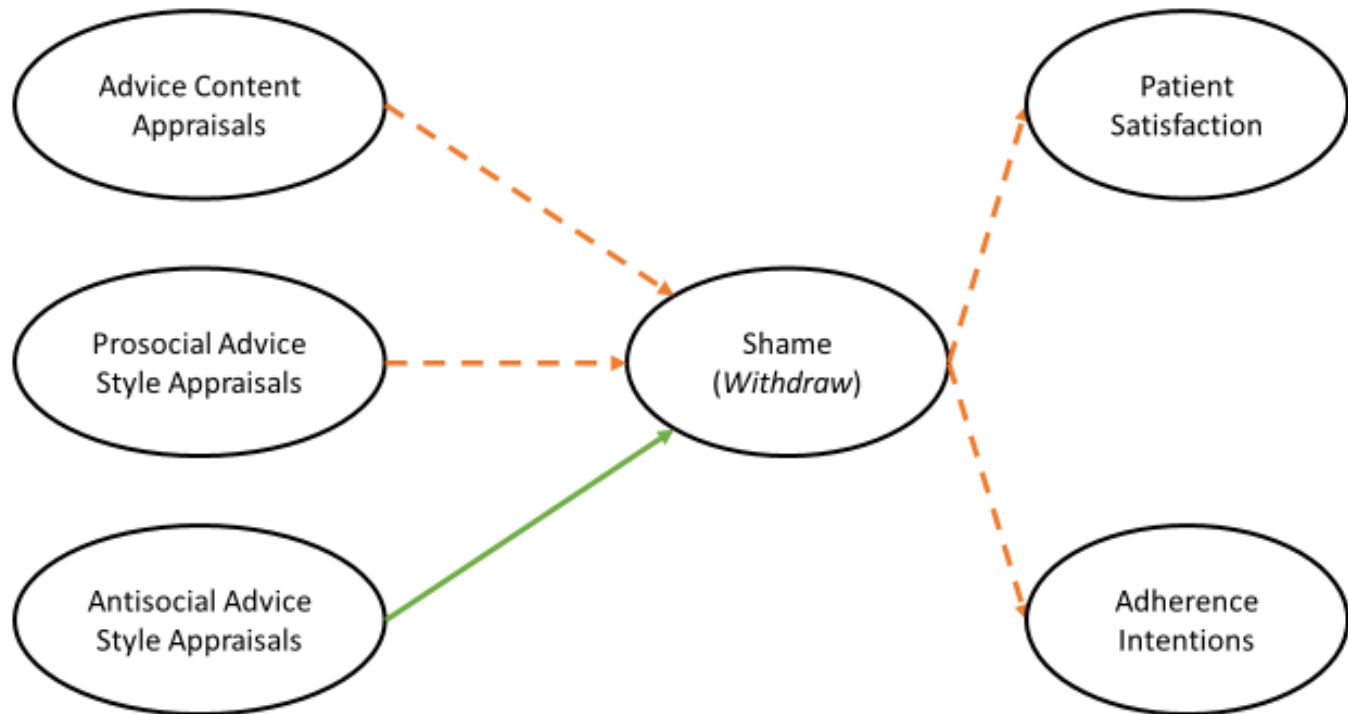


Figure 4 depicts predictions about shame. Shame involves the most straightforward predictions among the six emotions included in this study. Acknowledging that self-management advice is efficacious, feasible, and does not have drawbacks runs counter to shame, which involves feeling like a small, worthless, and helpless person (i.e., internal, stable, uncontrollable attributions; see Tracy & Robins, 2007b). Advice content appraisals should therefore negatively predict shame. Similarly, prosocial advice style appraisals should negatively predict shame because prosocial messages affirm patients' competence (positive facework) and self-control (negative facework). Antisocial messages should promote shame by criticizing patients' character and abilities. Evidence suggests chronic pain patients who feel ashamed also feel defeated and disabled by their pain (Turner-Cobb et al., 2015). Since ashamed patients feel they are incapable of doing anything about their pain, they should see no reason to adhere to recommended self-management strategies. It follows that:

H11: (a) Advice content appraisals and (b) prosocial advice style appraisals are negatively associated with shame.

H12: Antisocial advice style appraisals are positively associated with shame.

H13: Shame is negatively associated with advice outcomes.

**Figure 5**

*Guilt Model*

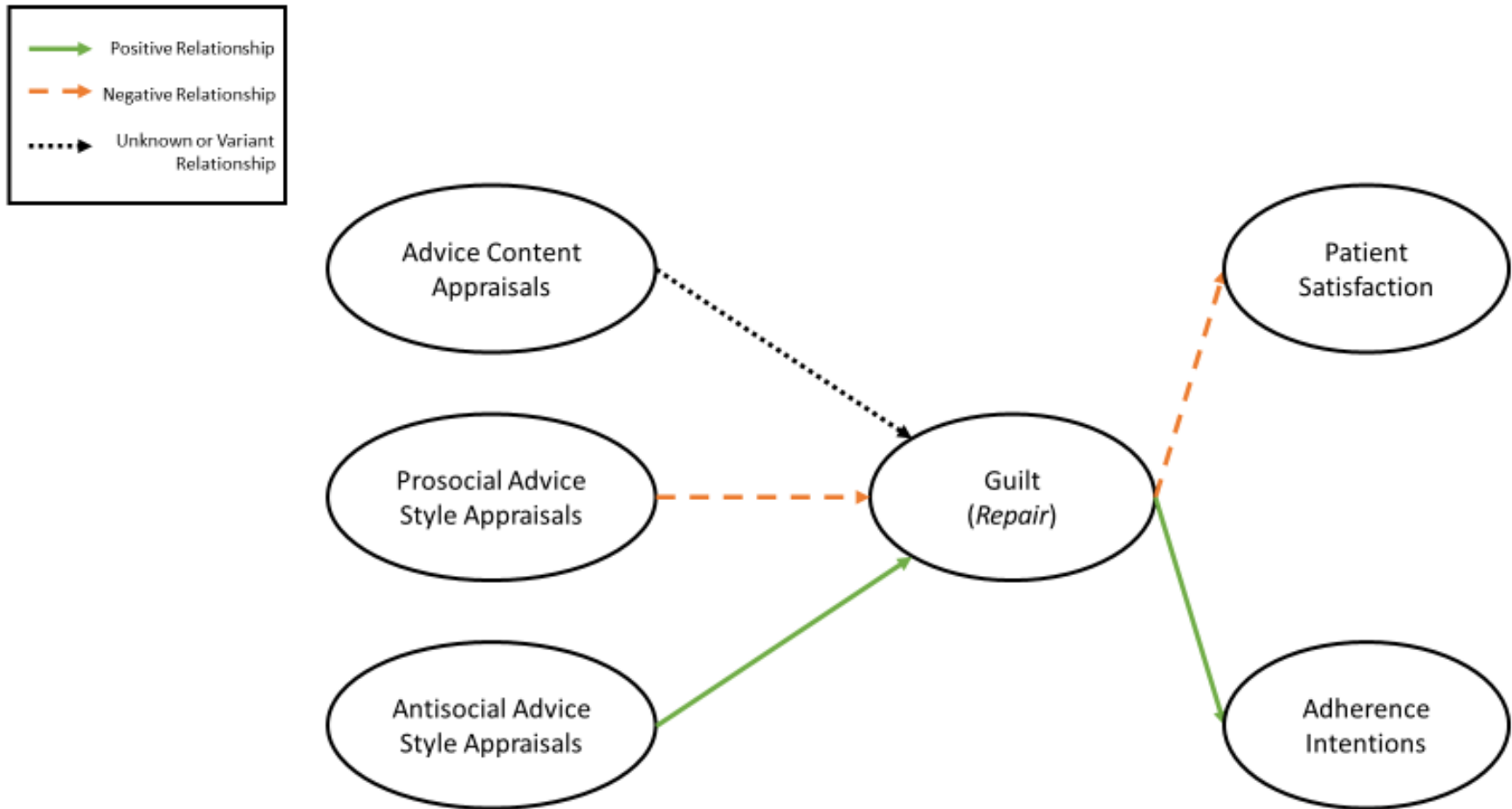


Figure 5 displays propositions concerning guilt. Guilt is distinguished from shame by focus on regret for one's actions rather than disdain for oneself (Tangney & Dearing, 2002), leading to distinct theoretical predictions. For instance, even though providers' criticism of patients' current behaviors (e.g., failing to diet and exercise, gaining excess weight that increases pain) should induce guilt, this should motivate increased rather than decreased adherence intentions (i.e., because patients are motivated to repair the damage caused by past actions; Tangney & Dearing, 2002). Prosocial advice style, in contrast, should buffer against guilt by reassuring patients they are liked and can do what they need to do to self-manage their pain moving forward. It is unclear if advice content appraisals will relate to guilt. Content appraisals reflect an awareness of effective options for changing unhealthy behaviors in favor of effective self-management, but advice is unlikely to alleviate guilt until after a patient has implemented the advised self-management strategies. For these reasons, both hypotheses and research questions are presented:

RQ3: Are advice content appraisals associated with guilt?

H14: Prosocial advice style appraisals are negatively associated with guilt.

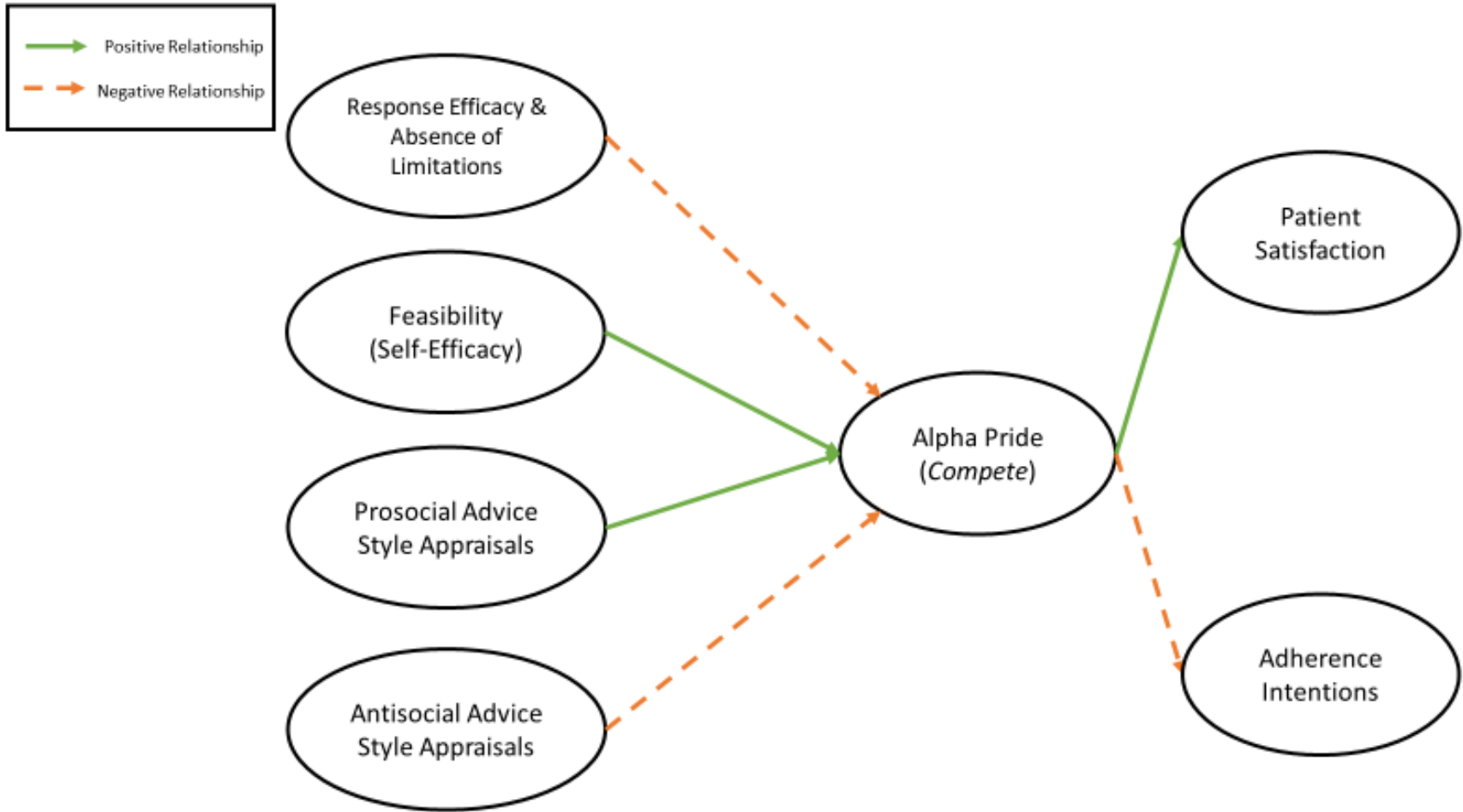
H15: Antisocial advice style appraisals are positively associated with guilt.

H16: Guilt is negatively associated with patient satisfaction.

H17: Guilt is positively associated with adherence intentions.

**Figure 6**

*Alpha Pride Model*



Although under-investigated in both advice and chronic pain management research, pride—especially beta pride—shows promise for motivating people to self-manage their pain. Williams and DeSteno (2009) assert that pride “should impel one to incur short-term costs (e.g., expenditure of high effort) for the purpose of reaping longer-term rewards” (p. 284). Chronic pain self-management requires patients to exert short-term efforts (e.g., changing their diet, scheduling adequate rest time) to achieve long-term gains (e.g., reduced pain, increased physical functioning; Dorflinger et al., 2013), so pride may motivate effective self-management. However, this effect is not uniform between alpha and beta pride (see Carver & Johnson, 2010)

Figure 6 addresses specific predictions for alpha pride. Acknowledging a provider’s solution is efficacious and does not have drawbacks should negatively predict alpha pride (i.e., the patient is forced to admit someone else—not them—has good idea). Messages that speak to patients’ perceived ability to perform the advised action (feasibility) as well as compliments and respectful communication (prosocial advice style appraisals) should positively predict alpha pride by because such messages are congruent with their identity goals of competing for high social status (Tracy & Robins, 2007a). However, the stable and uncontrollable attributions associated with alpha pride are fragile in the face of criticism and commands that undermine their social status (Tracy & Robins, 2007a, 2007b), which means antisocial advice style appraisals should negatively predict alpha pride. Alpha pride motivates competitive and dominating behaviors (Carver & Johnson, 2010), so alpha pride should lead patients to think their provider’s solution is inferior to their own ideas for managing their pain and consequently predict decreased adherence intentions (e.g., de Hooge et al., 2014). Accordingly, I propose the following hypotheses:

H18: (a) Response efficacy and (b) absence of limitations are negatively associated with alpha pride.

H19: (a) Feasibility and (b) prosocial advice style appraisals are positively associated with alpha pride.

H20: Antisocial advice style appraisals are negatively associated with alpha pride.

H21: Alpha pride is positively associated with patient satisfaction.

H22: Alpha pride is negatively associated with adherence intentions.

**Figure 7**

*Beta Pride Model*

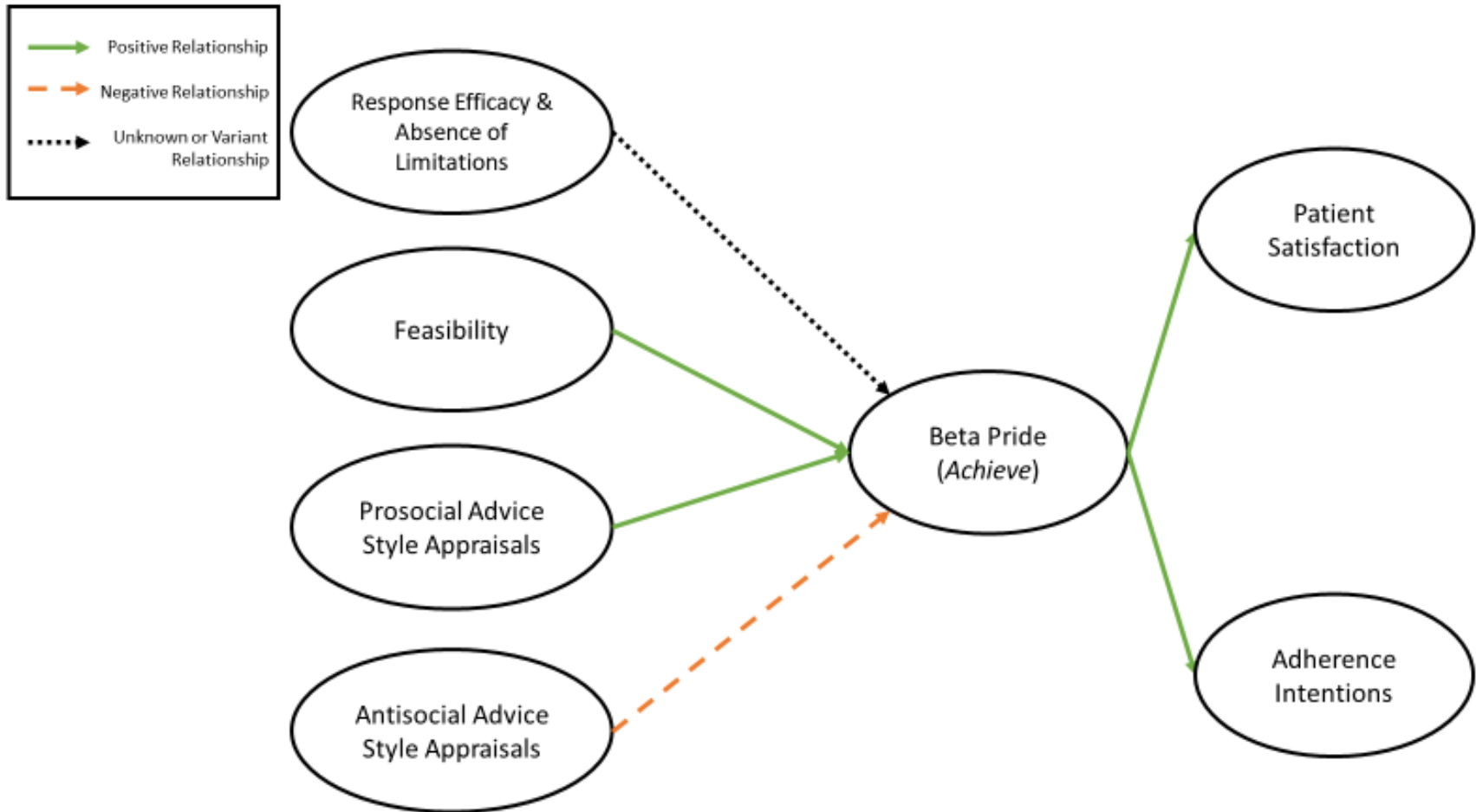


Figure 7 reflects theoretical propositions about beta pride. Because alpha and beta pride share an emphasis on positive attributions about oneself and one's abilities, feasibility and prosocial advice style appraisals should positively predict beta pride, and antisocial advice style appraisals should negatively predict beta pride. Response efficacy and absence of limitations may or may not be associated with beta pride. Unlike alpha pride, beta pride is not dependent on social dominance, so there is no reason to be threatened by a provider devising a high-quality solution. For example, someone could be proud of their self-management behaviors (i.e., beta pride) and still acknowledge that their provider can help them make further progress. There is also no reason to suspect someone else designing an effective self-management strategy (response efficacy) without negative side effects (absence of limitations) would induce beta pride since the health care provider—not the patient—is credited with the accomplishment. In contrast to alpha pride, beta pride should positively predict adherence intentions because the patient should be focused on the long-term goal of pain management and be willing to exert effort to perform the advised self-management strategy (Carver & Johnson, 2010; Dorflinger et al., 2013; Williams & DeSteno, 2009). The following research questions and hypotheses reflect these (potential) relationships:

RQ4: Are (a) response efficacy and (b) absence of limitations associated with beta pride?

H23: (a) Feasibility and (b) prosocial advice style appraisals are positively associated with beta pride.

H24: Antisocial advice style appraisals are negatively associated with beta pride.

H25: Beta pride is positively associated with advice outcomes.

Linking the full theoretical model back to the emotion-specific models raises an additional question about the role of emotions in advice message processing. It is unclear if

message feature appraisals will have direct effects on advice outcomes or only indirect effects through their influence on emotions. Original ART theorizing suggests direct relationships between advice message feature appraisals and outcomes. Appraisal theorizing and psychological advice research maintain that emotions are the most proximal predictors of affective and behavioral advice outcomes (de Hooge et al., 2014; Gino & Schweitzer, 2008; Lazarus, 1991). Even so, Lazarus (1991) acknowledges that cognitive appraisals are part of people's emotional responses, leaving room for the possibility that cognitive appraisals of advice message features may have direct links to advice outcomes. To test this possibility, the following research question is posed:

RQ5: Do advice message feature appraisals share direct associations with advice outcomes, or only indirect associations as mediated by social emotions?

### **The Moderating Role of Patient Traits**

The final component of the theoretical model to consider is the role of patients' characteristics in self-management advice message processing. In ART, recipient stable traits are conceptualized as moderators, strengthening or weakening associations between advice content appraisals and advice outcomes (Bodie & MacGeorge, 2022). Such moderation is explained in terms of dual process logic: certain types of people may be more or less likely to carefully scrutinize messages, and careful message processing strengthens the relationships between advice content appraisals and outcomes (Bodie & Burleson, 2008; Bodie & MacGeorge, 2022). The present study investigates the potential moderating role of three patient traits: biological sex, reactance proneness, and gratitude proneness.

First, extant studies evidence sex differences in advice message processing (see reviews by Bodie & MacGeorge, 2022; MacGeorge, Guntzviller, et al., 2016). MacGeorge, Guntzviller,

et al. (2016) found partial support for their hypothesis that advice content evaluations would exert a stronger influence on advice outcomes for women compared to men. In the chronic pain context, women are more likely to seek medical attention for their pain (e.g., more motivated to seek and attend to advice), suggesting a similar moderating effect is likely for self-management advice from providers. However, this evidence and theorizing is limited to advice content (i.e., efficacy, feasibility, and absence of limitations) and therefore does not speak to advice style appraisals. Given that women are proposed to more closely scrutinize emotionally supportive messages compared to men (see Bodie & Burleson, 2008), it makes sense that prosocial advice style appraisals should also exert a stronger influence on advice outcomes for women compared to men. Moreover, women with chronic pain are less likely to be believed by their doctors (Hoffmann & Tarzian, 2001), and disbelief can manifest as suspicion, criticism, or even hostility (i.e., antisocial messages; e.g., Pryma, 2017). It is plausible that, because women frequently encounter interpersonal expressions of distrust (e.g., Petrocchi et al., 2019), they are more attentive to antisocial messages as well. Importantly, these predictions are contingent on whether direct paths exist between advice message feature appraisals and outcomes after accounting for the mediating role of emotions (RQ5). It follows that:

H26: Relationships between advice message feature appraisals and outcomes are stronger for women compared to men.

The present study also proposes to test the potential moderating influence of two patient emotional proneness characteristics: reactance proneness and gratitude proneness. In general, both proneness characteristics should strengthen positive associations and weaken negative associations between advice message feature appraisals and their respective state emotions (and potentially advice outcomes). Patients prone to reactance should be sensitive to providers'

influence attempts, such as messages that criticize past or current behaviors (e.g., poor diet) and threaten freedom by telling patients how they should change their behavior to manage their pain (D'Angelo & D'Angelo, 2018; Quick et al., 2013). Patients prone to reactance may also overlook prosocial messages because of their tendency to focus on freedom-threatening language.

Gratitude prone patients, in contrast, should be apt to see the silver lining in medical consultations (McCullough et al., 2002). More precisely, gratitude proneness should strengthen the positive influence of prosocial advice style and weaken the negative influence of antisocial advice style, promoting gratitude. Gratitude prone patients should also be more apt to appreciate that their provider took the time to give what they perceive to be effective advice (i.e., associate message content appraisals with gratitude). This leads to a final set of hypotheses and research questions:

H27: As reactance proneness increases, the positive associations (a) feasibility, (b) absence of limitations, and (c) antisocial advice style appraisals share with reactance increase.

H28: As reactance proneness increases, the negative associations (a) response efficacy and (b) prosocial advice style appraisals share with reactance decrease.

H29: As gratitude proneness increases, the positive associations (a) message content appraisals and (b) message style appraisals share with gratitude increase.

H30: As gratitude proneness increases, the negative association between antisocial advice style appraisals and gratitude decreases.

RQ6: Do (a) reactance proneness and (b) gratitude proneness moderate the direct relationships between advice message feature appraisals and advice outcomes?

## Chapter 3: Method

### Participants and Recruitment

All recruitment and sampling procedures were reviewed and approved by the University of Illinois Institutional Review Board. American adults living with chronic pain who self-identified as having previously received advice from a health care provider about how to self-manage their pain were recruited via the Prolific platform (<https://app.prolific.co/>). To be invited to complete the study, individuals first had to complete an eligibility screening. Eligibility criteria specified that participants should (a) currently be experiencing pain that has persisted for longer than three months (i.e., chronic pain; see WHO, 2020); and (b) have received self-management advice from a health care provider in the past six months, where self-management advice was defined as “recommendations about nutrition, physical activity, sleep, over-the-counter medications and supplements, or anything else you can do to manage your own chronic pain other than using prescription medications.” All individuals received US\$0.20 for completing the eligibility screening. Only individuals who answered affirmatively to both questions were invited to participate in the study.

The main study included multiple safeguards to combat invalid survey responses (e.g., bots or scripts, inattentive respondents). First, an interactive CAPTCHA was included alongside other eligibility questions to guard against bots (see review by Moradi & Keyvanpour, 2014). Second, three instructed response items were dispersed throughout the survey to check participants’ attention (e.g., “To demonstrate you are paying attention, please select *strongly agree*”; Gummer et al., 2021). Only participants who passed the CAPTCHA were able to complete the study, and data were only retained for participants who passed two out of three attention check items. In total, 387 people completed the eligibility verification questionnaire,

218 people were eligible to complete the main questionnaire, and 211 people met both the eligibility and attention requirements and successfully completed the survey. Participants received US\$6.00 for completing the study. One person who successfully completed the survey was subsequently removed because they did not specify what self-management advice they received from their provider, and two more people were excluded because they reported advice about prescription medication and surgery, which did not meet the definition of self-management advice that was presented to participants.

Table 2 contains detailed demographic information for the final sample. The sample included 208 American adults who mostly identified as cisgender, heterosexual, non-Hispanic White women, although there was some representation from other gender, racial, and ethnic groups. Participants had a wide range of diagnosed and undiagnosed conditions, prominently neurological diseases and disorders (e.g., multiple sclerosis, migraine headaches, fibromyalgia), connective tissue diseases and disorders (e.g., arthritis, Ehlers-Danlos syndrome), spinal diseases and disorders (e.g., degenerative disc disease), and injuries or surgeries (e.g., soft tissue damage, broken bones, amputation, knee and hip replacements). Participants reported that providers were approximately evenly split between men and women and were primarily physicians.

## **Procedure**

After certifying their eligibility and providing their informed consent to participate in the study, participants completed a cross-sectional survey based on retrospective recall of a recent advice conversation (e.g., Feng & MacGeorge, 2010; Guntzviller, Wang, et al., 2020; see also Guntzviller, 2018, for a review). At the beginning of the survey, participants reported demographic information about themselves and a specific health care provider who recently gave them self-management advice. Participants reported the title and an initial for their health care

provider as well as a description of the self-management advice they received; this information was piped into relevant questions throughout the rest of the survey. Both strategies were intended to improve internal validity by helping participants remember the advice and provider they were reporting on.

The remainder of the survey involved questions about key variables. Questions were organized into the groups of constructs detailed in the conceptual model depicted in Figure 1 and listed in Table 1. Questions were also presented in the chronological time order detailed in the proposed theoretical model. First, participants reported on stable characteristics that preceded the advice conversation, including patient traits (i.e., reactance proneness and gratitude proneness), trust in their health care provider, and receptiveness to advice. Next, participants completed questions about the content and style of the advice message. Then, participants reported their emotional responses following the consultation in which they received the self-management advice using a variation of the relived emotion task developed by Ekman et al. (1983). The original task asks participants to imagine an event that makes them feel a specific emotion (e.g., anger, fear) for 30 seconds prior to measuring their self-reported emotional response. The task was adapted to invite participants to imagine how they felt immediately following the reported self-management advice-containing consultation. The instructions reminded participants that they may have felt multiple emotions following the consultation. A built-in timer encouraged participants to reflect on the consultation and how it made them feel for 30 seconds before responding to the emotion items (i.e., participants could not answer the emotion items until 30 seconds passed). Finally, participants reported the outcomes of the advice conversation (i.e., patient satisfaction and adherence intentions).

**Table 2***Sociodemographic Characteristics of Participants*

Sample characteristics	<i>n</i>	%	<i>M</i>	<i>SD</i>	Range
<b>Biological sex</b>					
Male	81	40.50%			
Female	125	60.09%			
Intersex	1	0.48%			
Prefer not to say	1	0.48%			
<b>Gender</b>					
Cisgender man	80	38.46%			
Cisgender woman	113	54.32%			
Transgender man	3	1.44%			
Non-binary/third gender	11	5.30%			
Prefer not to say	1	0.48%			
<b>Ethnicity</b>					
Hispanic/Latinx	13	6.30%			
Not Hispanic/Latinx	195	93.80%			
<b>Race</b>					
American Indian/Alaska Native	6	2.88%			
Asian/Asian American	12	5.77%			
Black/African American	16	7.70%			
White/European American	180	86.50%			
Other	3	1.40%			
Mixed-race	11	5.30%			
Prefer not to say	1	0.48%			
Age			36.4	12.04	18–75
<b>Diagnosis</b>					
Congenital/developmental disorder	5	2.50%			
Connective tissue disease/disorder	53	25.48%			

**Table 2 (cont.)**

Sample characteristics	<i>n</i>	%	<i>M</i>	<i>SD</i>	Range
Diabetes	7	3.37%			
Gastrointestinal disease/disorder	19	9.13%			
Injury/surgery	31	14.90%			
Neurological disease/disorder	57	27.40%			
Overweight/obesity	7	3.37%			
Endometriosis	5	3.37%			
Spinal disease/disorder	41	14.64%			
Other disease/disorder	8	3.85%			
Disease/disorder not specified	8	3.85%			
No diagnosis	31	14.90%			
Prefer not to say	2	1.00%			
Health care provider gender					
Man	103	49.50%			
Woman	105	50.50%			
Health care provider title					
Nurse	4	1.90%			
Nurse practitioner	19	9.10%			
Occupational therapist	1	0.50%			
Physical therapist	22	10.60%			
Physician	119	57.20%			
Physician's assistant	10	4.80%			
Psychiatrist	3	1.40%			
Psychologist	4	1.90%			
Other	26	12.50%			

*Note.* *N* = 208. Some frequencies exceed 100% because participants endorsed multiple characteristics (e.g., multiple racial/ethnic identities, multiple diagnoses).

## Data Diagnostics

Data exhibited non-normality (Mardia's multivariate skewness = 4295.93, Mardia's multivariate kurtosis = 27.14), so all analyses utilized robust standard errors. Multivariate outliers were present (i.e., 13 individuals with Mahalanobis' distance > 46.8). Multivariate outliers did not evidence response bias (e.g., straightlining) and tended to report higher levels of anger and freedom threat and/or lower levels of gratitude compared to other participants. Put differently, this sample may have been biased toward highly grateful and satisfied patients in trusting relationships with their health care providers, and multivariate outliers may have represented a meaningful subsample of less-satisfied patients (who were possibly under-sampled). Therefore, the multivariate outliers were retained in subsequent statistical analyses.

Less than 0.1% of the data was missing. To investigate the cause of data missingness, I utilized Little's (1988) missing completely at random (MCAR) test. Results of Little's MCAR test were statistically significant,  $\chi^2(1578) = 1711.07, p = .01$ , indicating a failure to reject the null hypothesis that the data was not missing completely at random. However, Little's MCAR test was developed for application to multivariate normal distributions, and a statistically significant MCAR test is almost inevitable when there is a large sample size (e.g., > 200) and non-normal multivariate distribution (Jamshidian & Jalal, 2010), both of which are true of this sample. Considering the negligible amount of missing data (< 2.0% for any individual item and < 0.1% total) and the large, non-normally distributed sample, the decision was made to handle missing data using full information maximum likelihood estimation (FIML). FIML has been demonstrated to produce parameter estimates that are less biased compared to other techniques for handling missing data when applied to non-normally distributed data (Enders, 2001).

## Power Analysis

A priori power analyses were conducted using an online calculator (<https://www.danielsoper.com/statcalc/calculator.aspx?id=89>) designed to determine sample size and power estimates for structural equation models. Based on 20 latent factors (i.e., constructs in the theoretical model) and 112 observed indicators (i.e., items in the questionnaire), analyses indicated that the approximate sample size necessary for 80% power at  $p = .05$  was approximately 227 participants to detect medium effects ( $\geq 0.3$ ) and 56 participants to detect large effects ( $\geq 0.5$ ). These estimates remained stable even after dropping 13 items based on confirmatory factor analysis (CFA; discussed in the proceeding section). Thus, the sample size of 208 was not sufficient to detect small effects, may have been slightly underpowered for medium effects, and is more than sufficient for detecting large effects in statistical tests of the complete theoretical model using structural equation modeling.

Both CFAs (see proceeding section) and structural regression models (see Chapter 4) were conducted in ways that accounted for the statistical power provided by the final sample size of 208. CFAs were conducted using a series of smaller models with fewer latent factors and observed indicators in each model. The largest single CFA contained seven latent factors and 31 observed indicators (i.e., the CFA for all emotion items). Based on a priori power analyses, the approximate sample size necessary for 80% power to detect medium-sized effects ( $\geq 0.3$ ) at  $p = .05$  was 170 participants. The final sample size of 208 was therefore sufficient to detect medium and large effects in all CFAs (although still underpowered for small effects  $\geq 0.1$ ).

Structural regression analyses (described in Chapter 4) utilized observed means for each scale, rather than individual items as observed indicators of latent factors, to represent theoretical constructs. The only exception was reactance, which was modeled as a latent combination of the

observed means for anger and negative cognitions. The final structural regression model (without moderators) included one latent variable and 19 observed variables. A priori power analyses indicated the minimum sample size necessary for this model to have 80% power to detect small effects ( $\geq 0.1$ ) at  $p = .05$  was 87 participants. Thus, the final sample size of 208 was more than sufficient to detect small effects in the structural regression models.

## Measures

Descriptions of the measures follow; all items are included in Appendix A. Unless otherwise indicated, all measures were assessed using 5-point Likert-type items (1 = *strongly disagree*, 5 = *strongly agree*) and scored such that higher values represent more of each construct. All measures were submitted to confirmatory factor analysis to ensure variables were unidimensional representations of the constructs of interest. I used Kline's (2011) recommended cutoff criteria for acceptable model fit: a comparative fit index (CFI)  $> 0.90$ , a Tucker-Lewis index (TLI)  $< 0.90$ , a root mean square error of approximation (RMSEA)  $< 0.08$ , and a standardized root mean square residual (SRMR)  $< 0.08$ . I did not follow Kline's guideline of a nonsignificant chi-square test. Research indicates chi-square tests are likely to be statistically significant, even if there is not substantial model misfit, when: (a) there is a large sample size (e.g.,  $> 200$ ), (b) there is substantial degree of data non-normality (Hu & Bentler, 1999; Saris et al., 2009; Vandenberg, 2006). All chi-square tests were statistically significant, likely because of the large sample size of 208 and considerable multivariate skewness and kurtosis. Because I investigated the underlying causes of the statistically significant chi-square tests and statistically accounted for one of the potential causes (i.e., data non-normality was handled using robust standard errors), I deemed it appropriate to proceed with measurement and structural regression analyses despite the statistically significant chi-square tests (see Kline, 2011; Vandenberg, 2006).

Furthermore, I adhered to Kline's (2011) guidelines for two other absolute fit indices (i.e., RMSEA and SRMR), which did not evidence substantial misfit between the theoretical models and the data.

I attempted to run a single measurement model containing all variables (see Holbert & Stephenson, 2008; Stephenson & Holbert, 2003). A single measurement model for all variables failed to converge, so I examined a set of smaller models containing measures of closely related constructs. The groups of measures included in the measurement models are reported in Table 3. I began with a series of CFAs wherein all items were included for each construct of interest. I removed items one by one until conceptual concerns were resolved and acceptable model fit was achieved based on: (a) face validity of the items, (b) standardized factor loadings  $< 0.60$ , and (c) the highest modification index. Model fit statistics for the initial models and final models are included in Table 3. All items and their initial and final factor loadings are included in Appendix A. Thirteen total items were dropped across all measures based on concerns about face validity, standardized factor loadings  $< 0.60$ , and high modification indices. A complete list of dropped items and the reason(s) each item was dropped are included in Appendix B. Items dropped from each measure are also noted in their descriptions that follow. Items retained based on CFAs were averaged to compute scores for each construct.

**Table 3***Fit Statistics for Confirmatory Factor Analyses*

Model	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	<i>SRMR</i>
<b>Patient traits</b>				
<i>Reactance proneness, gratitude proneness</i>				
Initial model	0.85	0.83	0.09	0.07
Final model	0.93	0.91	0.07	0.06
<b>Advice antecedents</b>				
<i>Trust, receptiveness</i>				
Initial model	0.95	0.94	0.07	0.05
Final model	0.99	0.99	0.06	0.02
<b>Advice content appraisals</b>				
<i>Response efficacy, feasibility, absence of limitations</i>				
Initial model	0.98	0.96	0.08	0.05
Final model	—	—	—	—
<b>Prosocial advice style appraisals</b>				
<i>Positive facework, negative facework</i>				
Initial model	0.95	0.94	0.07	0.06
Final model	0.97	0.96	0.07	0.05
<b>Antisocial advice style appraisals</b>				
<i>Positive face threat, negative face threat, freedom threat</i>				
Initial model	0.96	0.95	0.07	0.04
Final model	—	—	—	—
<b>Social emotions</b>				
<i>Reactance, gratitude, shame, guilt, alpha pride, beta pride</i>				
Initial model	0.90	0.89	0.08	0.07
Final model	0.97	0.97	0.05	0.05
<b>Advice outcomes</b>				
<i>Patient satisfaction, adherence intentions</i>				
Initial model	0.99	0.99	0.06	0.02
Final model	—	—	—	—

*Note.*  $N = 208$ . Reported fit statistics were calculated using robust standard errors to account for nonnormally distributed data. Constructs included in each CFA are listed in italics.

### ***Patient Trust in Provider***

Patient trust in their health care provider was measured using Anderson and Dedrick's (1990) Patient Trust in Physician Scale. The 11-item scale includes items related to both expertise (e.g., “[provider] is a real expert in taking care of medical problems like mine”) and trustworthiness (e.g., “I trust [provider] to tell me if a mistake was made about my treatment”). Ten items remained after dropping a single item (i.e., “I sometimes worry that [provider] may not keep the information we discuss totally private”).

### ***Patient Receptiveness to Self-Management Advice***

In line with Guntzviller, Wang, et al. (2020), I utilized a 4-item measure of receptiveness to advice developed by MacGeorge et al. (2019). Items were tailored to specify the provider as the source of advice and chronic pain self-management as the topic (e.g., “I hoped [provider] would help me come up with a plan for managing my own pain”).

### ***Patient Traits***

Reactance proneness was measured using an 11-item version of Hong and Faedda's (1996) Hong Psychological Reactance Scale (HPRS) as factor-analyzed by Shen and Dillard (2005). A sample item is “I resist the attempts of others to influence me.” Gratitude proneness was measured using the Gratitude Questionnaire-6 (GQ-6) developed by McCullough et al. (2002). The 6-item measure uses a 7-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*), and includes items such as “I have so much in life to be thankful for.” One gratitude proneness item was dropped (i.e., “Long amounts of time can go by before I feel grateful for something or someone” *reverse scored*). Five items remained.

### ***Advice Content Appraisals***

I measured advice content appraisals using items employed in extant ART studies (e.g., Guntzviller, Liao, et al., 2020; MacGeorge, Guntzviller, et al., 2016). Items were tailored to focus on the goal of pain self-management. Three items each assessed response efficacy (e.g., “I believed [provider]’s advised action could help me improve my chronic pain”), feasibility (e.g., “[provider] advised me to do something I am capable of doing”), and absence of limitations (e.g., “I predicted [provider]’s advice would have serious drawbacks” *reverse scored*).

### ***Prosocial Advice Style Appraisals***

As with advice content appraisals, prosocial advice style appraisals were assessed using items adapted from previous studies. The instructions were modified by directing participants to report on their provider’s communication during the consultation rather than only how they gave advice. Eight items assessed positive facework (e.g., “[provider] made me feel liked”). Two positive facework items were dropped (i.e., “[provider] treated me as a competent person”; “[provider] did not suggest I lacked ability”). Six positive facework items remained. Four items assessed negative facework (e.g., “[provider] made it clear that I could choose to take their advice or not”).

### ***Antisocial Advice Style Appraisals***

Positive and negative face threat were measured using items previously employed by Guntzviller and Bigsby (2020). Eight items measured positive face threat (e.g., “[provider] made me feel disliked”). Four items assessed negative face threat (e.g., “[provider] did not respect my right to choose”). One negative face threat item was dropped (i.e., “[provider] made it clear that I should take their advice”). Three items remained. Freedom threat was assessed using Dillard and

Shen's (2005) 4-item measure of freedom threat (e.g., "[provider] threatened my freedom to choose").

### ***Social Emotions***

The present study included a battery of emotion items that combined multiple extant measures. Participants responded to all emotion items using a 5-point scale that reflected emotional intensity (1 = *did not feel this way at all*, 5 = *felt this way very strongly*). The four anger items were based on Dillard and Peck (2001; e.g., "angry"). The three gratitude items were previously used by Gino and Schweitzer (2008; e.g., "grateful").

Alpha pride (e.g., "smug") and beta pride (e.g., "accomplished") items were developed by Tracy and Robins (2007a). Following Tangney and Dearing's (2002) guidelines for adjective-based emotion measures, I reduced the alpha pride items by removing two words that may have posed comprehension difficulties for participants (i.e., "egotistical, pompous") and reduced the beta pride items by removing two items that were phrases rather than adjectives (e.g., "Like I am achieving"). Five items each remained for alpha pride and beta pride. However, two alpha pride items were subsequently dropped (i.e., "arrogant"; "snobbish"). Three items remained for alpha pride.

Additionally, Marschall et al.'s (1994) State Shame and Guilt Scale (SSGS) was used to measure shame (e.g., "I felt like I was a bad person") and guilt ("I felt bad about something I had done"), because these two emotions are difficult for participants to differentiate using adjectives (see Tangney & Dearing, 2002). However, several items in the original scale are double-barreled (e.g., "I felt remorse, regret"). Per Furr's (2017) recommendations, I split the items into separate statements (e.g., "I felt remorse" and "I felt regret"). The measure therefore included seven items each for shame and guilt. Three shame items (i.e., "I felt like I was a bad person"; "I felt

humiliated”; “I felt disgraced”) were dropped. Four shame items remained. Three guilt items (i.e., “I felt like apologizing”; “I felt like confessing”; “I felt bad about something I had done”) were dropped. Four guilt items remained.

### ***Negative Cognitions***

The present study used a three-item negative cognitions scale recommended by Reynolds-Tylus et al. (2021). Items were modified to specify negative cognitions about the providers’ self-management advice (e.g., “My thoughts about [provider]’s advice were mostly unfavorable”).

### ***Patient Satisfaction***

The present study assessed patient satisfaction using a 6-item version of Hecht’s (1978) measure of conversation satisfaction that was previously employed by Guntzviller, MacGeorge et al. (2017). Items were modified to use the word “consultation” rather than “conversation.” A sample item is: “I was very satisfied with the consultation.”

### ***Adherence Intentions***

Because Feng et al. (2011) measured adherence intentions using only a single item that would have precluded reliability and factor analyses, the present study instead utilized three items adapted from MacGeorge, Guntzviller, et al.’s (2016) measure of implementation intentions. Additionally, the items were tailored based on an initial response to the question, “Did you do what your [provider] advised you to do to self-manage your pain? (*yes or no*).” A sample item is, “I plan to [follow/continue following] the advice [provider] gave me.”

## **Covariates**

The present study included four covariates common in past tests of ART and supportive communication research more broadly: patient age, patient sex, provider sex, and the number of days since advice was received.

### ***Patient Age***

Participants self-reported their age in years. Descriptive statistics are reported in Table 4.

### ***Patient Sex***

Participants self-reported their sex using the following categories: male, female, intersex, or prefer not to say. Due to low representation of other groups, only participants who reported either male or female sex were included in statistical analyses. Descriptive statistics are reported in Table 4.

### ***Provider Sex***

Participants reported their perceptions of their health care provider's gender using the following categories: man, woman, non-binary/third gender, or don't know/prefer not to say. All participants reported their health care provider was either a man or a woman, and this information was treated as a proxy for health care provider sex. Descriptive statistics are reported in Table 4.

### ***Days Since Advice Received***

Participants reported the approximate date of the consultation in which they received self-management advice using a digital calendar. The number of days since receiving advice was calculated using a formula that counted the days between the date provided and the date of questionnaire completion. The number of days ranged from 0–3,743. Approximately 88% percent of the sample reported on advice received in the past 207 days (i.e., roughly six months),

and over 96% of the sample reported on advice received within the past 872 days (i.e., less than two and a half years).

## Chapter 4: Results

### Preliminary Analyses

Before conducting substantive analyses, preliminary analyses were conducted to understand sample characteristics, response patterns, and bivariate relationships. Data were analyzed using SPSS 28.0 and R version 4.1.2. Items retained based on confirmatory factor analyses (see Chapter 3) were averaged to compute variables and generate descriptive statistics and bivariate correlations. Means, standard deviations, ranges, and zero-order correlations for all variables are reported in Table 4. All variables were correlated in the theoretically expected directions, apart from alpha pride, which was only weakly associated with beta pride and was not related to any other variables (I discuss issues with alpha pride measurement in Chapter 5). Given that the alpha pride measure had acceptable factor loadings, alpha pride was included in the structural equation models for hypothesis testing purposes.

**Table 4***Descriptive Statistics and Zero-Order Correlations*

Variable	Range	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Reactance proneness	1.0–5.0	2.73	0.72	—						
2. Gratitude proneness	1.6–7.0	5.54	1.26	-0.03	—					
3. Patient trust	1.0–5.0	3.84	0.90	-0.04	0.40**	—				
4. Patient receptiveness	1.3–5.0	4.42	0.79	-0.07	0.28**	0.46**	—			
5. Response efficacy	1.0–5.0	4.08	0.88	-0.06	0.47**	0.57**	0.43**	—		
6. Feasibility	1.0–5.0	4.28	0.85	0.06	0.43**	0.51**	0.29**	0.55**	—	
7. Absence of limitations	1.0–5.0	4.11	1.01	-0.14*	0.35**	0.41**	0.25**	0.40**	0.58**	—
8. Positive facework	1.2–5.0	3.78	0.94	-0.05	0.46**	0.79**	0.41**	0.59**	0.57**	0.44**
9. Negative facework	1.0–5.0	4.11	0.82	-0.03	0.35**	0.53**	0.38**	0.44**	0.41**	0.33**
10. Positive face threat	1.0–4.5	1.52	0.85	0.03	-0.34**	-0.73**	-0.33**	-0.52**	-0.58**	-0.50**
11. Negative face threat	1.0–4.0	1.52	0.70	0.05	-0.36**	-0.57**	-0.40**	-0.44**	-0.48**	-0.46**
12. Freedom threat	1.0–4.3	1.60	0.71	0.02	-0.29**	-0.53**	-0.30**	-0.35**	-0.45**	-0.44**
13. Negative cognitions	1.0–5.0	1.70	1.10	0.04	-0.43**	-0.66**	-0.39**	-0.62**	-0.63**	-0.51**
14. Anger	1.0–5.0	1.85	1.08	0.10	-0.31**	-0.63**	-0.30**	-0.56**	-0.55**	-0.49**
15. Gratitude	1.0–5.0	3.24	1.36	0.01	0.40**	0.62**	0.41**	0.56**	0.52**	0.43**
16. Pride	1.0–5.0	2.37	1.13	0.01	0.38**	0.49**	0.29**	0.46**	0.39**	0.38**
17. Hubris	1.0–2.7	1.09	0.27	0.01	-0.02	-0.06	-0.08	0.06	0.01	0.01
18. Guilt	1.0–4.5	1.46	0.74	0.05	-0.25**	-0.24**	-0.09	-0.24**	-0.21**	-0.41**
19. Shame	1.0–5.0	1.67	1.03	0.14*	-0.35**	-0.51**	-0.24**	-0.48**	-0.40**	-0.43**
20. Patient satisfaction	1.0–5.0	3.84	1.12	-0.04	0.45**	0.73**	0.44**	0.61**	0.59**	0.48**
21. Adherence intentions	1.0–5.0	4.23	1.03	-0.13	0.42**	0.51**	0.42**	0.54**	0.65**	0.48**

**Table 4 (cont.)**

Variable	8	9	10	11	12	13	14
1. Reactance proneness							
2. Gratitude proneness							
3. Patient trust							
4. Patient receptiveness							
5. Response efficacy							
6. Feasibility							
7. Absence of limitations							
8. Positive facework	—						
9. Negative facework	0.63**	—					
10. Positive face threat	-0.78**	-0.57**	—				
11. Negative face threat	-0.56**	-0.69**	0.72**	—			
12. Freedom threat	-0.52**	-0.49**	0.71**	0.68**	—		
13. Negative cognitions	-0.73**	-0.55**	0.73**	0.58**	0.46**	—	
14. Anger	-0.66**	-0.49**	0.69**	0.51**	0.49**	0.74**	—
15. Gratitude	0.68**	0.47**	-0.54**	-0.38**	-0.37**	-0.67**	-0.67**
16. Pride	0.64**	0.39**	-0.42**	-0.29**	-0.32**	-0.54**	-0.55**
17. Hubris	0.06	0.02	0.03	0.03	0.01	-0.02	-0.01
18. Guilt	-0.33**	-0.30**	0.33**	0.32**	0.41**	0.31**	0.70**
19. Shame	-0.58**	-0.42**	0.54**	0.46**	0.33**	0.61**	0.44**
20. Patient satisfaction	0.79**	0.58**	-0.71**	-0.55**	-0.48**	-0.83**	-0.81**
21. Adherence intentions	0.49**	0.41**	-0.48**	-0.47**	-0.42**	-0.60**	-0.52**

**Table 4 (cont.)**

Variable	15	16	17	18	19	20	21
1. Reactance proneness							
2. Gratitude proneness							
3. Patient trust							
4. Patient receptiveness							
5. Response efficacy							
6. Feasibility							
7. Absence of limitations							
8. Positive facework							
9. Negative facework							
10. Positive face threat							
11. Negative face threat							
12. Freedom threat							
13. Negative cognitions							
14. Anger							
15. Gratitude	—						
16. Pride	0.80**	—					
17. Hubris	0.10	0.16*	—				
18. Guilt	-0.23**	-0.22**	0.05	—			
19. Shame	-0.54**	-0.48**	0.01	0.62**	—		
20. Patient satisfaction	0.81**	0.66**	0.05	-0.33**	-0.69**	—	
21. Adherence intentions	0.55**	0.41**	-0.01	-0.20**	-0.35**	0.60**	—

Note.  $N = 208$ .

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

## **Substantive Analyses**

The substantive analyses were conducted using structural equation modeling in the *lavaan* package for R (Rosseel, 2012). All variables were modeled as observed except for reactance, which was modeled as a latent variable with mean anger and negative cognition scores as observed indicators. To account for nonnormally distributed data, models employed robust maximum likelihood estimation; all reported fit statistics are robust. Patient gender, patient age, health care provider gender, and days since receiving the advice were entered as control variables (i.e., exogenous paths to advice outcomes). Including the control variables resulted in losing five cases with missing data ( $n = 203$ ). That is, despite using FIML to handle missing data, five cases were deleted listwise because FIML cannot impute missing data for variables that are not endogenous (i.e., are only predictors and not outcomes).

Analyses utilized Kline's (2011) recommended criteria for acceptable model fit—except for a nonsignificant chi-square test given the large sample size and data non-normality (Hu & Bentler, 1999; Saris et al., 2009; Vandenberg, 2006)—including CFI and TLI  $> 0.90$  and RMSEA and SRMR  $< 0.08$ . Consistent with prior ART research (e.g., Guntzviller, Wang, et al., 2020), variables grouped together at each theoretically predicted time point in the mediation model were allowed to covary: advice message feature appraisals were covaried, social emotions were covaried, and advice outcomes were covaried. All reported coefficients are estimates calculated by standardizing all variables in the model.

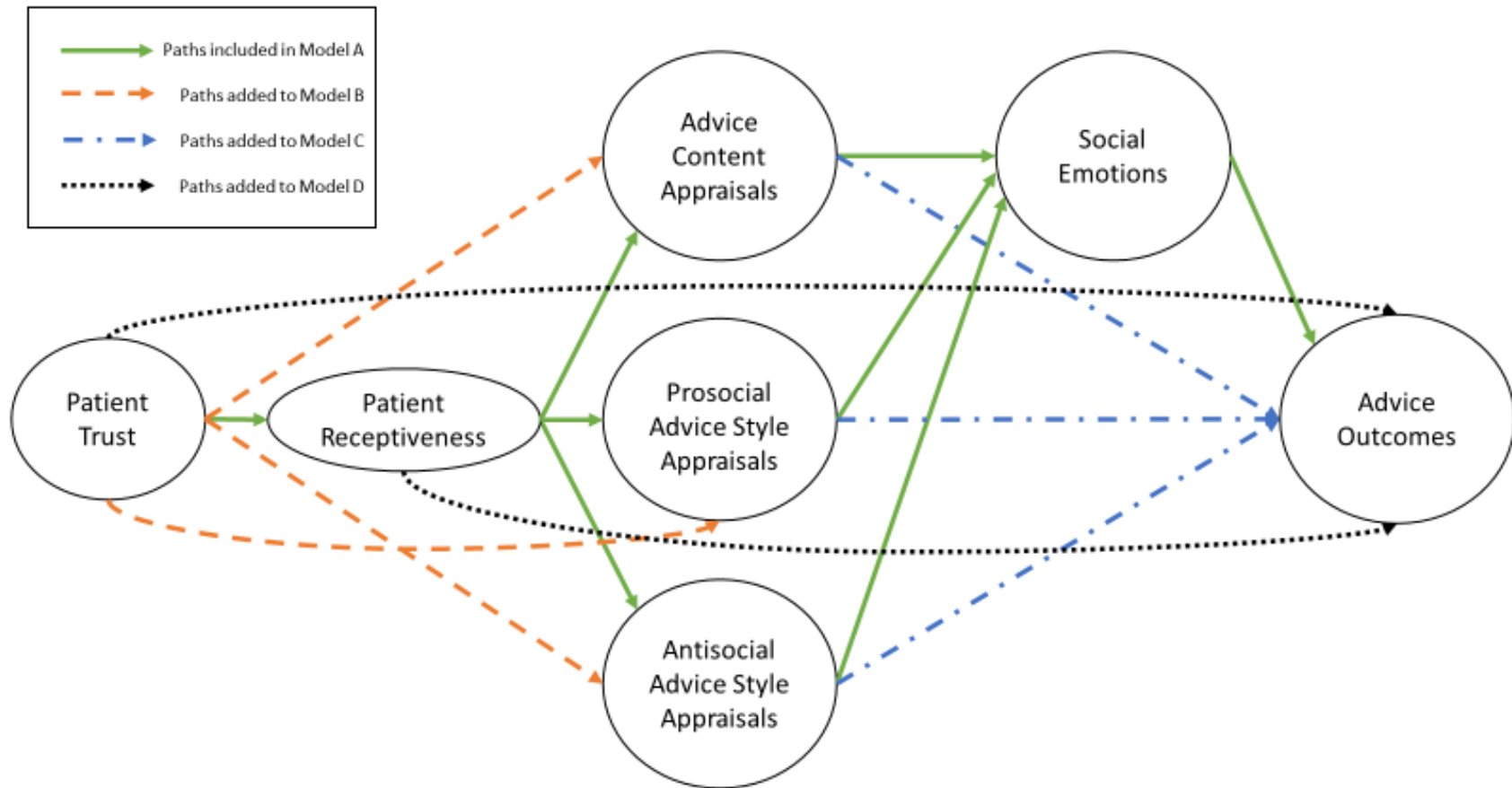
### ***Comparison of Mediation Models***

Comparing a series of structural equation models was necessary to examine H1–H25 and RQ1–RQ5. First, to investigate RQ1, RQ2, and RQ5 regarding mediated and direct paths, five nested models were compared (see Figure 8): (a) one without any direct paths between patient

trust and advice message feature appraisals, between advice message feature appraisals and advice outcomes, between patient trust and advice outcomes, or between patient receptiveness and advice outcomes (Model A); (b) one with direct paths added from patient trust to advice message feature appraisals only (Model B); (c) one with direct paths added from advice message features to outcomes only (Model C); (d) one with direct paths added from trust and receptiveness to advice outcomes only (Model D); and (e) one with all direct paths added (Model E). Acceptable model fit was not achieved for Model A, CFI = 0.88, RMSEA = 0.12 (90% confidence interval [CI] = [0.10, 0.13]), SRMR = 0.13; Model C, CFI = 0.89, RMSEA = 0.12 (90% CI = [0.10, 0.13]), SRMR = 0.13; or Model D, CFI = 0.88, RMSEA = 0.12 (90% CI = [0.10, 0.13]), SRMR = 0.13. Two models achieved acceptable fit: Model B, CFI = 0.96, RMSEA = 0.07 (90% CI = [0.06, 0.08]), SRMR = 0.04; and Model E, CFI = 0.98, RMSEA = 0.05 (90% CI = [0.03, 0.07]), SRMR = 0.04. Model E fit the data significantly better than Model B ( $\chi^2_{diff} = 70.11, p < .001$ ), so Model E (i.e., the model with all direct paths added) was used for all subsequent analyses. Model E explained 61.2% of the variance in adherence intentions and 94.8% of the variance in patient satisfaction. Figure 9 displays the path model with only statistically significant paths. Table 5 includes a summary of the model with standardized regression coefficients ( $\beta$ ) and standard errors (*SE*).

**Figure 8**

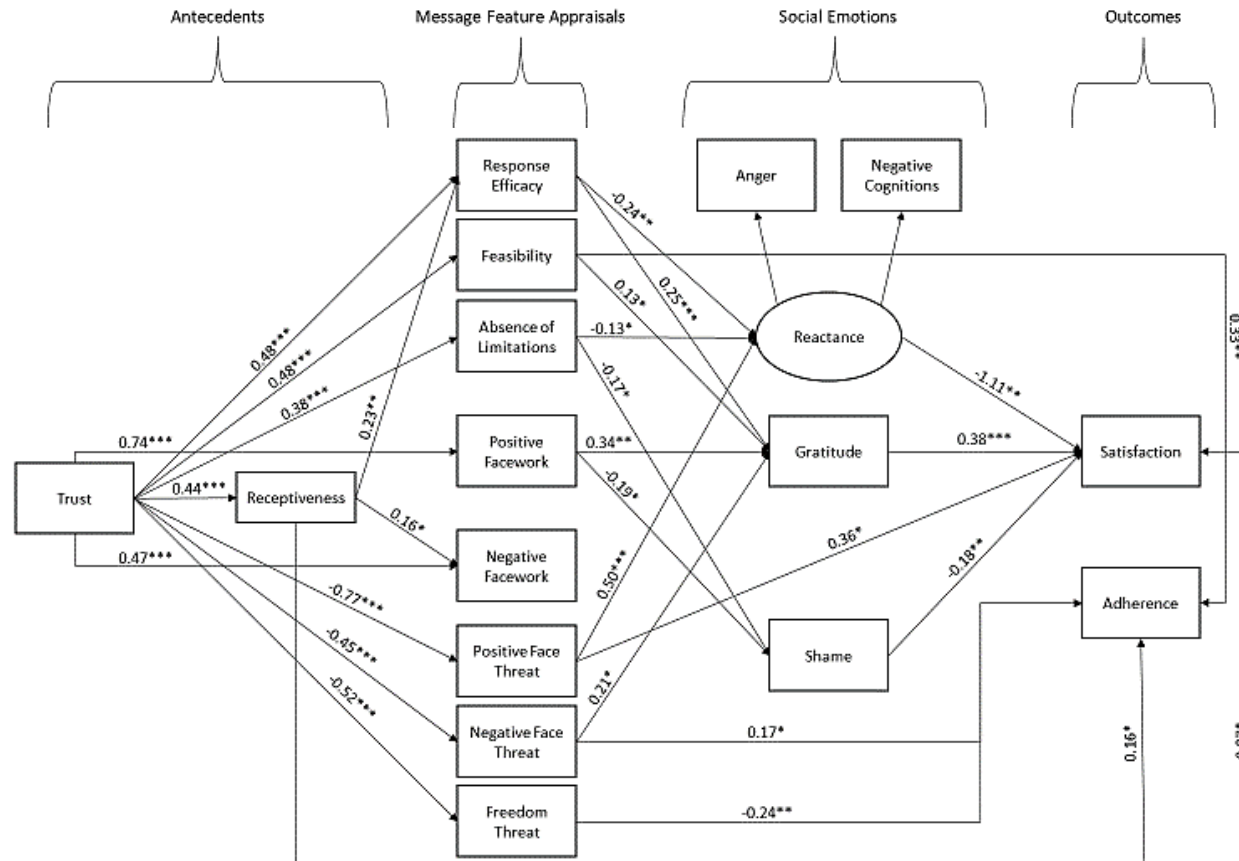
*Nested Models for Fit Comparisons*



*Note.* Models B, C, and D include Model A paths and specified additions. Model E contains all paths displayed in the figure. The constructs included in each category are listed in Table 1.

**Figure 9**

*Results for Structural Equation Model E*



*Note.* Coefficients are standardized beta coefficients. Only statistically significant paths are reported. Statistically significant paths from absence of limitations to guilt, response efficacy to beta pride, and positive facework to beta pride are omitted for visual clarity.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 5***Structural Equation Model Results*

Antecedents → Message Feature Appraisals			Message Feature Appraisals → Emotions		
Path	$\beta$	<i>SE</i>	Path	$\beta$	<i>SE</i>
Trust → Receptiveness	0.44***	0.09	Response Efficacy → Reactance	-0.24**	0.06
Receptiveness → Response Efficacy	0.23**	0.08	Absence of Limitations → Reactance	-0.13*	0.05
Receptiveness → Negative Facework	0.16*	0.07	Positive Face Threat → Reactance	0.50***	0.08
Trust → Response Efficacy	0.48***	0.08	Response Efficacy → Gratitude	0.24***	0.06
Trust → Feasibility	0.48***	0.08	Feasibility → Gratitude	0.13*	0.06
Trust → Absence of Limitations	0.38***	0.08	Positive Facework → Gratitude	0.34**	0.11
Trust → Positive Facework	0.74***	0.04	Absence of Limitations → Shame	-0.17*	0.08
Trust → Negative Facework	0.47***	0.06	Absence of Limitations → Guilt	-0.32**	0.10
Trust → Positive Face Threat	-0.77***	0.06	Response Efficacy → Pride	0.19**	0.06
Trust → Negative Face Threat	-0.45***	0.07	Positive Facework → Pride	0.52***	0.10
Trust → Freedom Threat	-0.52***	0.08			

**Table 5** (cont.)

Antecedents/Message Feature Appraisals/Emotions → Outcomes		
Path	$\beta$	<i>SE</i>
Receptiveness → Satisfaction	0.07*	0.03
Positive Face Threat → Satisfaction	0.36*	0.17
Reactance → Satisfaction	-1.11**	0.41
Gratitude → Satisfaction	0.38***	0.06
Shame → Satisfaction	-0.18**	0.06
Receptiveness → Adherence	0.16*	0.07
Feasibility → Adherence	0.33**	0.10
Negative Face Threat → Adherence	0.17*	0.08
Freedom Threat → Adherence	-0.24**	0.09

*Note.*  $N = 203$ . Coefficients are standardized. Only statistically significant paths are reported.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Based on the results of the model fit comparisons, the mediation model with all direct paths added (Model E) was used to evaluate all hypotheses and research questions. The remainder of this chapter focuses on presenting statistically significant results. Nonsignificant associations are noted when relevant to hypotheses and research questions, but coefficients are only reported for statistically significant results. I begin by addressing ART-consistent predictions concerning direct and mediated relationships between patient trust, patient receptiveness, and advice message feature appraisals (RQ1, H1–H2). Second, I detail direct and mediated relationships between advice antecedents (i.e., trust, receptiveness), message feature appraisals, and advice outcomes (RQ2, H3–H4). Then, I discuss general patterns in direct and mediated relationships among advice message feature appraisals, social emotions, and advice outcomes (RQ5) and continue by delineating results specific to reactance (H5–H7), gratitude (H8–H10), shame (H11–H13), guilt (RQ3, H14–H17), alpha pride (H18–H22) and beta pride (RQ4, H23–H25). Finally, I address the moderating roles of patient sex, reactance proneness, and gratitude proneness in the associations that advice message feature appraisals and social emotions share with advice outcomes (H27–H30, RQ6).

### ***Relationships Between Trust, Receptiveness and Message Feature Appraisals***

RQ1 asked if patient trust is directly associated with advice message feature appraisals, or if its associations with message feature appraisals are only indirect through its relationship with receptiveness. Receptiveness mediated two relationships between patient trust and advice message feature appraisals. Trust was positively associated with receptiveness ( $\beta = 0.44, p < .001$ ), and receptiveness had two positive relationships with advice message feature appraisals: response efficacy ( $\beta = 0.23, p < .001$ ) and negative facework ( $\beta = 0.16, p = .03$ ). There was a positive, indirect effect of trust on efficacy through receptiveness ( $\beta = 0.11, p = .001, 95\% \text{ CI}$

[0.05, 0.18]). There was also a positive, indirect effect of trust on negative facework through receptiveness ( $\beta = 0.07, p = .027, 95\% \text{ CI } [0.01, 0.14]$ ). These indirect effects provide evidence that receptiveness mediates the relationships trust shares with efficacy and negative facework. Trust was also directly, positively associated with response efficacy ( $\beta = 0.48, p < .001$ ) and negative facework ( $\beta = 0.47, p < .001$ ), as well as all other advice message feature appraisals (see Table 5). When the direct paths from trust were added, receptiveness was not associated any other message features. Thus, the findings for RQ1 suggest that trust is both directly and indirectly related to some message features as mediated by receptiveness.

H1 posited that patient trust is positively associated with advice content and prosocial style appraisals as mediated through receptiveness. As previously mentioned, trust was positively associated with receptiveness, and receptiveness was positively associated with both response efficacy and negative facework. However, trust also had positive, direct relationships with response efficacy ( $\beta = 0.48, p < .001$ ), feasibility ( $\beta = 0.48, p < 0.00$ ), absence of limitations ( $\beta = 0.38, p < 0.00$ ), positive facework ( $\beta = 0.74, p < .001$ ), and negative facework ( $\beta = 0.47, p < .001$ ). H1 was partially supported.

H2 similarly proposed that patient trust is negatively associated with antisocial style appraisals as mediated through receptiveness. Receptiveness was not associated with any antisocial style appraisals. However, trust had direct, negative relationships with positive face threat ( $\beta = -0.77, p < .001$ ), negative face threat ( $\beta = -0.45, p < .001$ ), and freedom threat ( $\beta = -0.52, p < .001$ ). Therefore, H2 was not supported.

### ***Relationships Between Antecedents, Message Feature Appraisals, and Outcomes***

RQ2 questioned whether (a) patient trust and (b) receptiveness have direct relationships with advice outcomes or only indirect effects on advice outcomes as mediated by advice message

feature appraisals. As previously mentioned, trust was associated with all advice message feature appraisals. Feasibility ( $\beta = 0.33, p < .001$ ) and negative face threat ( $\beta = 0.17, p = .04$ ) were positively related to adherence intentions, whereas freedom threat ( $\beta = -0.24, p = .01$ ) was negatively related to adherence intentions. Positive face threat ( $\beta = 0.36, p = .04$ ) was positively associated with patient satisfaction. Trust had positive, indirect associations with adherence intentions through feasibility ( $\beta = 0.16, p = .004, 95\% \text{ CI } [0.05, 0.27]$ ) and freedom threat ( $\beta = 0.12, p = .02, 95\% \text{ CI } [0.02, 0.22]$ ). The indirect effect of trust on patient satisfaction through negative face threat was not statistically significant. Trust also had a negative indirect association with patient satisfaction through positive face threat ( $\beta = -0.27, p = .045, 95\% \text{ CI } [-0.53, -0.01]$ ). Trust was not directly related to either advice outcome. In other words, the data suggest some advice message feature appraisals mediated the relationships between patient trust and advice outcomes.

As noted previously, receptiveness was only positively associated with response efficacy and negative facework, and neither response efficacy nor negative facework was associated with either advice outcome. Receptiveness was, however, related to both patient satisfaction ( $\beta = 0.07, p = .04$ ) and adherence intentions ( $\beta = 0.16, p = .02$ ). Thus, results indicate that message feature appraisals do not mediate the associations between receptiveness and advice outcomes.

H3 predicted positive relationships between (a) advice content appraisals and advice outcomes and (b) prosocial advice style appraisals and advice outcomes. Among message content appraisals, only feasibility was associated with adherence intentions ( $\beta = 0.33, p = .001$ ). Feasibility was not associated patient satisfaction, and no other advice content appraisals were associated with either advice outcome. H3a was partially supported. Prosocial advice style appraisals were not associated with advice outcomes. H3b was not supported.

H4 predicted negative associations between antisocial advice style appraisals and advice outcomes. Three antisocial advice style appraisals were associated with advice outcomes. As predicted, freedom threat was negatively associated with adherence intentions ( $\beta = -0.77, p < .001$ ). Unexpectedly, positive face threat was positively associated with patient satisfaction ( $\beta = 0.36, p = .04$ ), and negative face threat was positively associated with adherence intentions ( $\beta = 0.17, p = .04$ ). Results offer mixed support for H4.

### ***Relationships Between Message Feature Appraisals, Emotions, and Outcomes***

RQ5 questioned if message feature appraisals are directly associated with advice outcomes or only indirectly through the relationships they share with social emotions. Various emotions mediated associations between advice message feature appraisals and advice outcomes. Three message feature appraisals were associated with reactance: response efficacy ( $\beta = -0.24, p = .001$ ) and absence of limitations ( $\beta = -0.13, p = .02$ ) were negatively associated with reactance, and positive face threat ( $\beta = 0.50, p < .001$ ) was positively associated with reactance. Reactance was negatively correlated with patient satisfaction ( $\beta = -1.11, p = .001$ ; see following section discussion about this standardized regression coefficient exceeding 1.0). However, the indirect associations that response efficacy, absence of limitations, and positive face threat shared with patient satisfaction through reactance were not statistically significant, so mediation was not supported.

Four message feature appraisals were positively related to gratitude: response efficacy ( $\beta = 0.24, p < .001$ ), feasibility ( $\beta = 0.13, p = .03$ ), positive facework ( $\beta = 0.34, p = .001$ ), and negative face threat ( $\beta = 0.21, p = .02$ ). Gratitude was associated with patient satisfaction ( $\beta = 0.38, p < .001$ ). There were positive, indirect associations between response efficacy and patient satisfaction ( $\beta = 0.09, p = .001, 95\% \text{ CI } [0.05, 0.16]$ ), positive facework and patient satisfaction

( $\beta = 0.13, p = .006, 95\% \text{ CI } [0.05, 0.24]$ ), and negative face threat and patient satisfaction ( $\beta = 0.09, p = .01, 95\% \text{ CI } [0.03, 0.16]$ ) through gratitude. Mediation was supported for the relationships response efficacy, positive facework, and negative face threat share with patient satisfaction through gratitude. The indirect relationship between feasibility and patient satisfaction through gratitude was not statistically significant, so mediation was not supported for the relationship between feasibility and patient satisfaction through gratitude.

Two message feature appraisals were negatively associated with shame: absence of limitations ( $\beta = -0.17, p = .04$ ) and positive facework ( $\beta = -0.19, p = .04$ ). Shame ( $\beta = -0.18, p = .001$ ) was negatively related to patient satisfaction. However, neither indirect association via shame was statistically significant. Therefore, shame did not mediate the associations that absence of limitations and positive facework share with patient satisfaction.

There was also evidence of four direct associations between advice message feature appraisals and outcomes. Positive face threat was positively related to patient satisfaction ( $\beta = 0.36, p = .04$ ). Three message feature appraisals were directly related to adherence intentions: feasibility ( $\beta = 0.33, p = .001$ ) and negative face threat ( $\beta = 0.17, p = .04$ ) were positively associated with adherence intentions, whereas freedom threat ( $\beta = -0.36, p < .001$ ) was negatively associated with adherence intentions. No social emotions were associated with adherence intentions. Thus, the data suggest some message feature appraisals are directly associated with advice outcomes, while others are indirectly associated with advice outcomes through their relationships with various emotions. Next, I address hypotheses and research questions specific to each social emotion of interest.

**Relationships Between Message Feature Appraisals, Reactance, and Outcomes.** H5–H7 predicted relationships between advice message feature appraisals, reactance, and advice

outcomes. H5 stated response efficacy, positive facework, and negative facework are negatively associated with reactance. Response efficacy was negatively associated with reactance ( $\beta = -0.24, p = .009$ ). Positive and negative facework were not associated with reactance. H5 was partially supported. H6 proposed feasibility, absence of limitations, positive face threat, negative face threat, and freedom threat would be positively related to reactance. Only positive face threat was positively associated with reactance ( $\beta = 0.50, p < .001$ ), partially supporting H6. Negative relationships between reactance and advice outcomes were posited in H7. Reactance was negatively related to patient satisfaction ( $\beta = -1.11, p = .001$ ). Although standardized regression coefficients greater than one are uncommon, beta weights that exceed this threshold can legitimately occur and are especially likely when the statistical model explains a large portion of the variance in an outcome variable (see Deegan, 1978). Considering Model E explained approximately 94.8% of the variance in patient satisfaction, it is plausible that the regression coefficient between reactance and patient satisfaction is a valid finding. Therefore, H7 was partially supported.

**Relationships Between Message Feature Appraisals, Gratitude, and Outcomes.** H8–H10 predicted advice message feature appraisals are associated with gratitude, and gratitude is, in turn, positively associated with advice outcomes. H8 posited positive relationships between advice content and prosocial style appraisals and gratitude. Response efficacy ( $\beta = 0.24, p < .001$ ), feasibility ( $\beta = 0.13, p = .03$ ), and positive facework ( $\beta = 0.34, p = .001$ ) were all positively associated with gratitude, but absence of limitations and negative facework were not. H8 was partially supported. H9 proposed negative relationships between antisocial advice style appraisals and gratitude. Positive face threat was not associated with gratitude, and counter to predictions, negative face threat was positively associated with gratitude ( $\beta = 0.21, p = .02$ ). H9

was not supported. H10 stated gratitude is positively associated with advice outcomes. Gratitude was positively associated with patient satisfaction ( $\beta = 0.38, p < .001$ ) but not adherence intentions, partially supporting H10.

**Relationships Between Message Feature Appraisals, Shame, and Outcomes.** H11–H13 predicted relationships between advice message feature appraisals, shame, and advice outcomes. H11 stated advice content and prosocial advice style appraisals are negatively related to shame. Only absence of limitations ( $\beta = -0.17, p = .04$ ) and positive facework ( $\beta = -0.19, p = .04$ ) negatively predicted shame, partially supporting H11. H12 proposed antisocial advice style appraisals would be positively associated with shame. None of these relationships were statistically significant, so H12 was not supported. H13 stated shame would be negatively associated with both advice outcomes. However, shame was only negatively associated with patient satisfaction ( $\beta = -0.18, p = .001$ ), partially supporting H13.

**Relationships Between Message Feature Appraisals, Guilt, and Outcomes.** RQ3 and H14–H17 investigated relationships among advice message feature appraisals, guilt, and advice outcomes. RQ3 questioned if advice content appraisals are associated with guilt. Only absence of limitations ( $\beta = -0.32, p = .001$ ) was negatively associated with guilt. H14 proposed prosocial advice style appraisals are negatively related to guilt. Neither positive nor negative facework was related to guilt, so H14 was not supported. Conversely, H15 predicted positive relationships between antisocial advice style appraisals and guilt. Neither face threats nor freedom threats were related to guilt. H15 was not supported. H16 proposed guilt is negatively associated with patient satisfaction, and H17 stated guilt is positively associated with adherence intentions. Guilt was not associated with either advice outcome, so H16 and H17 were not supported.

### **Relationships Between Message Feature Appraisals, Alpha Pride, and Outcomes.**

H18–H22 postulated advice message feature appraisals are associated with alpha pride, and alpha pride is associated with advice outcomes. However, no advice message feature appraisals were associated with alpha pride, and alpha pride was not associated with any advice outcomes. Therefore, H18–H22 were not supported.

### **Relationships Between Message Feature Appraisals, Beta Pride, and Outcomes. RQ4**

and H23–H25 examined relationships between advice message feature appraisals, beta pride, and advice outcomes. RQ4 questioned if response efficacy and absence of limitations are related to beta pride. Response efficacy ( $\beta = 0.19, p = .001$ ) had a positive relationship with beta pride. H23 proposed feasibility, positive facework, and negative facework are positively associated with beta pride. Only positive facework ( $\beta = 0.52, p < .001$ ) was positively related to beta pride, partially supporting H23. Regarding H24, none of the antisocial advice style appraisals exhibited the proposed negative relationships with beta pride. Therefore, H24 was not supported. H25 proposed beta pride is positively associated with both advice outcomes. H25 was not supported because beta pride was not related to either advice outcome.

### ***Moderating Roles of Sex, Reactance Proneness, and Gratitude Proneness***

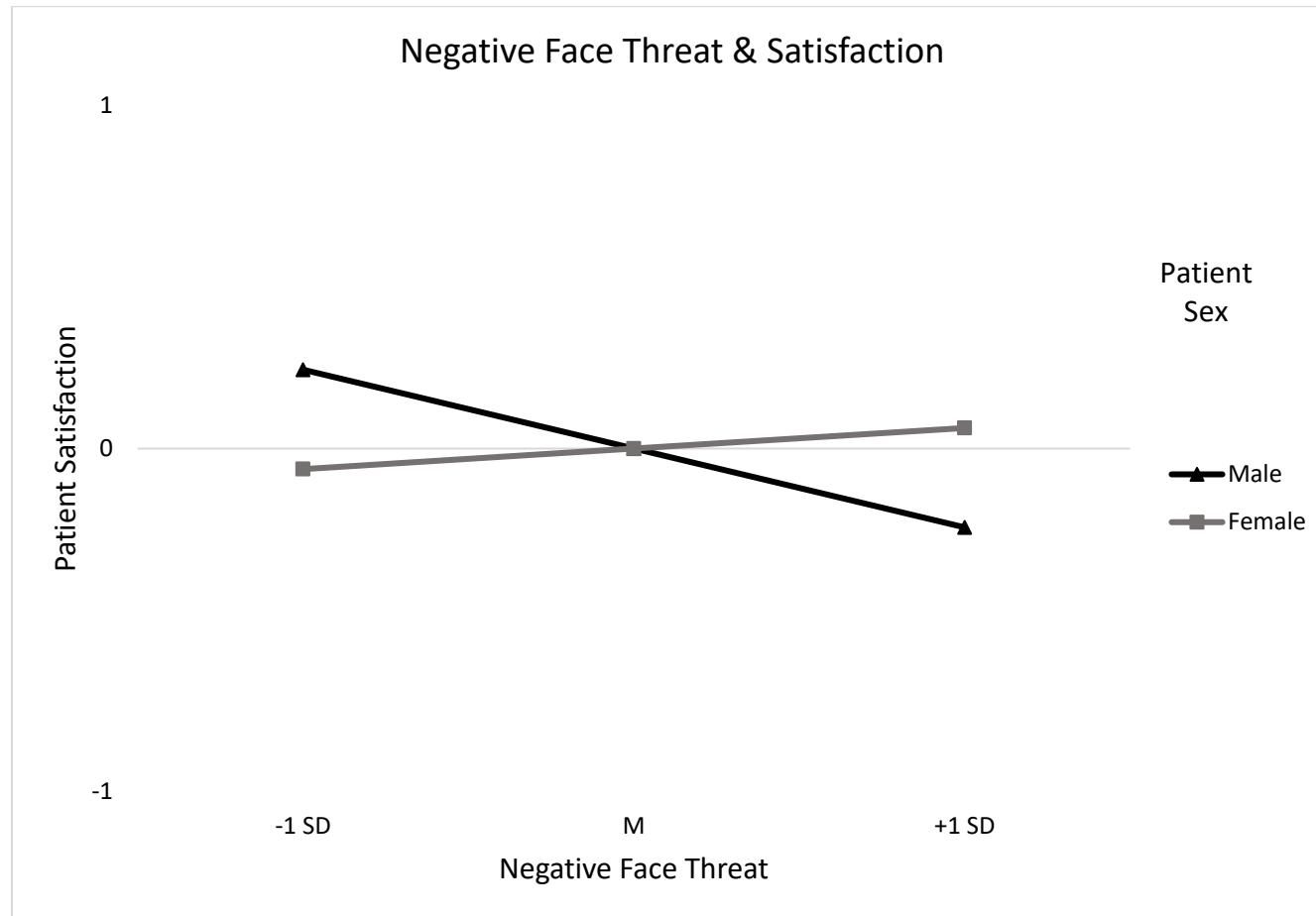
For each moderator, a series of structural equation models was computed by adding the interaction terms for one moderator at a time to Model E (i.e., the best-fitting model). All statistically significant interactions in this section were decomposed by computing simple slopes at the mean and at one standard deviation above and below the mean of the relevant moderator. Modifications to this process are discussed where applicable.

**The Moderating Role of Sex.** H26 predicted the associations between advice message feature appraisals and advice outcomes are stronger for women compared to men. The

interaction between response efficacy and patient sex predicted adherence intentions ( $\beta = 0.26, p = .01$ ). For statistically significant interactions involving patient sex, simple slopes were calculated using dummy-coded values for gender such that men were assigned zero and women were assigned one. However, decomposing the interaction between response efficacy and patient sex predicting adherence revealed that the relationship response efficacy and adherence intentions was not statistically significant for men ( $\beta = -0.18, p = .17$ ) nor women ( $\beta = 0.17, p = .24$ ). The interaction between negative face threat and patient sex was a statistically significant predictor of patient satisfaction ( $\beta = 0.29, p < .001$ ). Decomposing the interaction between negative face threat and patient sex revealed that negative face threat perceptions negatively predicted patient satisfaction for men ( $\beta = -0.23, p = .001$ ) but not women ( $\beta = 0.06, p = .49$ ). The interaction is plotted in Figure 10. Because this interaction was not in the predicted direction (i.e., women did not place more weight on message feature appraisals than men), H26 was not supported.

**Figure 10**

*Plot for Interaction between Patient Sex and Negative Face Threat Predicting Patient Satisfaction*



*Note.* Negative face threat and patient satisfaction are standardized. For patient sex, 0 = *male* and 1 = *female*. The Y-axis reflects standardized patient satisfaction scores. The X-axis reflects standardized negative face threat scores.

**The Moderating Role of Reactance Proneness.** H27–H28 proposed reactance proneness moderates the relationships that advice message feature appraisals share with reactance. H27 predicted that the positive associations (a) feasibility, (b) absence of limitations, and (c) antisocial advice style appraisals share with reactance increase as reactance proneness increases. Feasibility, absence of limitations, positive face threat, and negative face threat did not interact with reactance proneness to predict reactance. Only one interaction was statistically significant, which was between freedom threat and reactance proneness predicting reactance ( $\beta = 0.14, p < .001$ ). To decompose this interaction, the mean for the latent reactance variable was fixed at zero and the variance fixed at one prior to conducting simple slopes analysis. The analysis revealed a negative relationship between freedom threat and reactance at one standard deviation below the mean of reactance proneness ( $\beta = -0.14, p < .01$ ). This relationship became positive as reactance proneness increased and only reached statistical significance at three standard deviations above the mean of reactance proneness (reflected by three people in this sample;  $\beta = 0.23, p = .03$ ). This interaction is displayed in Figure 11. H27 was partially supported: higher-than-average levels of reactance proneness corresponded with a positive relationship between freedom threat and reactance, and lower-than-average levels of reactance proneness corresponded with a negative relationship between freedom threat and reactance.

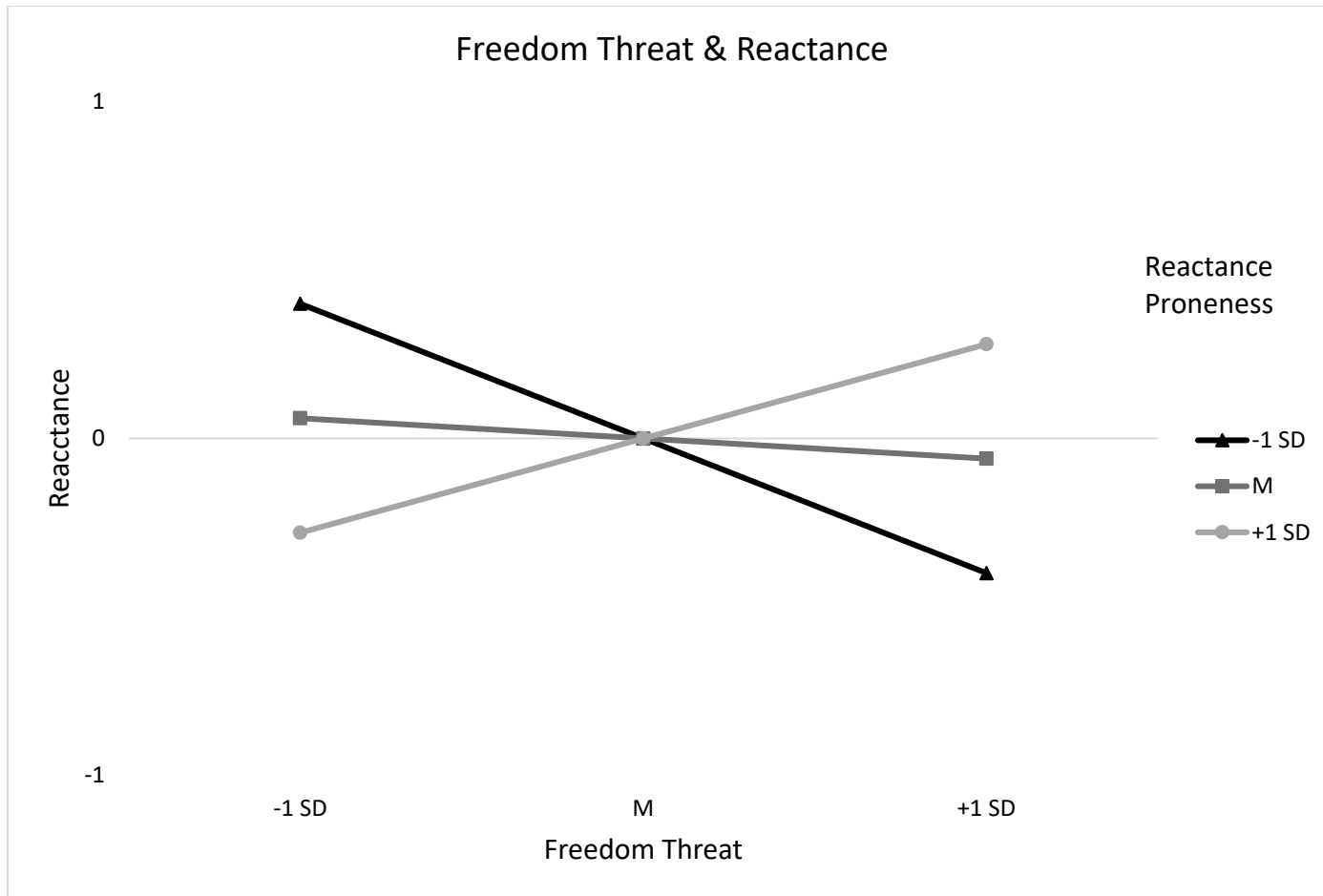
H28 posited the negative associations that (a) response efficacy and (b) prosocial advice style appraisals share with reactance decrease as reactance proneness increases. Response efficacy, positive facework, and negative facework did not interact with reactance proneness to predict reactance. Thus, H28 was not supported.

RQ6a similarly questioned if reactance proneness moderates the direct relationships between advice message feature appraisals and advice outcomes. No interactions between

reactance proneness and message feature appraisals predicted advice outcomes. In response to RQ6a, the results imply that reactance proneness is not moderator of the link between advice message feature appraisals and outcomes.

**Figure 11**

*Plot for Interaction between Reactance Proneness and Freedom Threat Predicting Reactance*



*Note.* All variables are standardized. The Y-axis reflects standardized reactance scores. The X-axis reflects standardized freedom threat scores.

**The Moderating Role of Gratitude Proneness.** H29–H30 posited gratitude proneness moderates the associations between advice message feature appraisals and gratitude. Four total interactions were statistically significant between gratitude proneness and advice message feature appraisals. H29 predicted the positive associations advice content and prosocial advice style appraisals share with gratitude increase as gratitude proneness increases. However, none of the relevant interactions were statistically significant, so H29 was not supported.

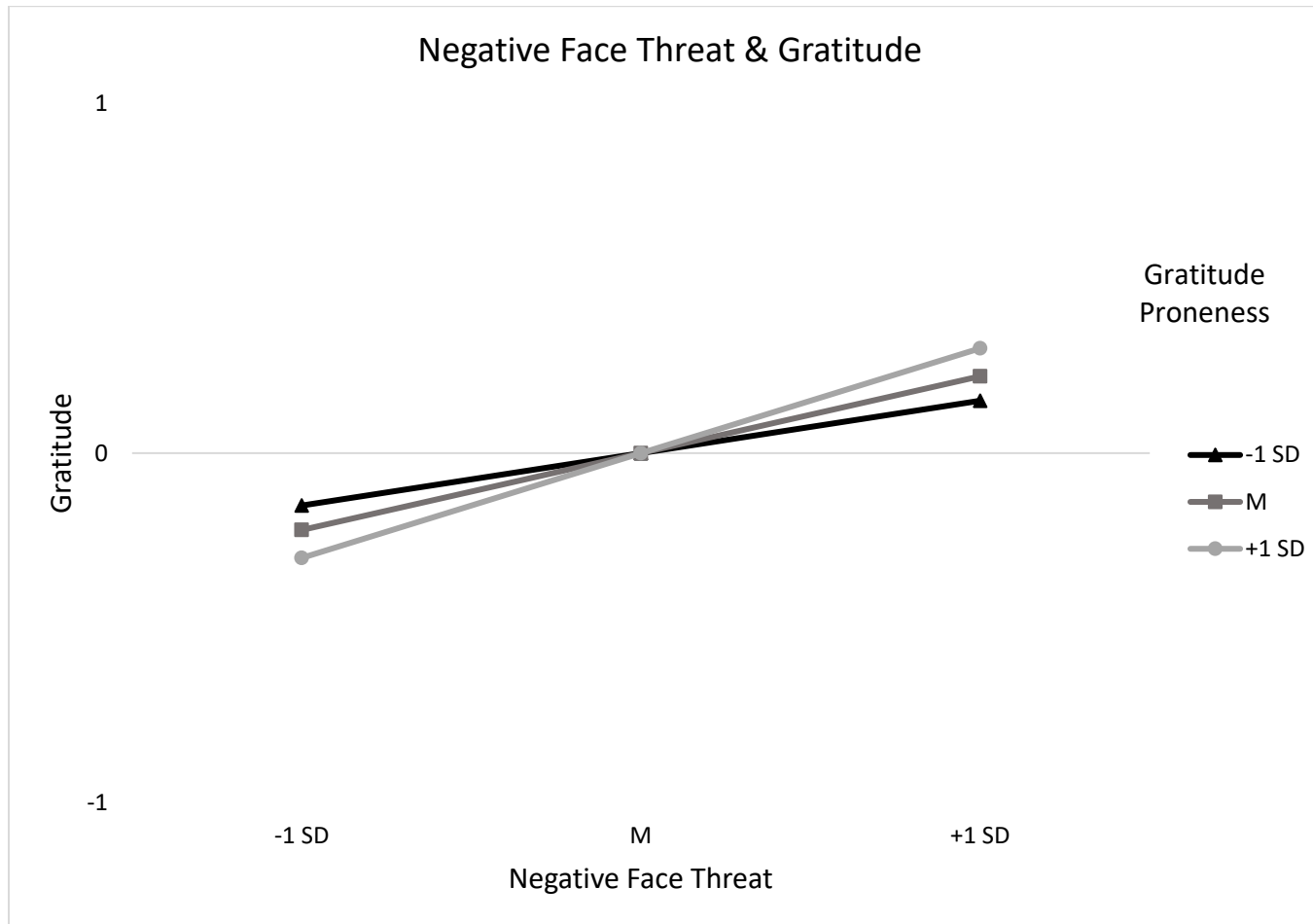
H30 predicted the negative associations between antisocial advice style appraisals and gratitude decrease as gratitude proneness increases. In response to H30, only the interaction between negative face threat and gratitude proneness was associated with gratitude ( $\beta = 0.22, p = .01$ ). At the mean of gratitude proneness ( $\beta = 0.22, p = .01$ ) and at one standard deviation below the mean of gratitude proneness ( $\beta = 0.30, p = .001$ ), negative face threat had positive associations with gratitude that increased as gratitude proneness decreased. This interaction is depicted in Figure 12. Since both the relationship between negative face threat and gratitude and the interaction effect were in the opposite of the hypothesized directions, H30 was not supported.

RQ6b investigated if gratitude proneness also moderates the direct associations between advice message feature appraisals and advice outcomes. Several interactions were relevant to RQ6b. The interaction between efficacy and gratitude proneness was associated with adherence intentions ( $\beta = -0.10, p = .02$ ). However, decomposing the interaction revealed the interaction was not statistically significant at one standard deviation above or below the mean of gratitude proneness. The interaction between feasibility and gratitude proneness predicted adherence intentions ( $\beta = -0.21, p < .001$ ), such that the positive relationship between feasibility and adherence intentions was only statistically significant at the mean of gratitude proneness ( $\beta = 0.25, p = .01$ ) and one standard deviation below the mean of gratitude proneness ( $\beta = 0.46, p <$

.001). This interaction is shown in Figure 13. The interaction between absence of limitations and gratitude proneness predicted adherence intentions ( $\beta = -0.18, p < .001$ ), such that when gratitude proneness was one standard deviation above its mean, absence of limitations was negatively associated with adherence intentions ( $\beta = -0.22, p = .02$ ), but the relationship was nonsignificant at mean levels of gratitude proneness, and it was positive and approached statistical significance at one standard deviation below the mean of gratitude proneness ( $\beta = 0.17, p = .11$ ). This interaction is displayed in Figure 14. In short, gratitude proneness moderated some (but not all) of the relationships between advice message feature appraisals and outcomes.

**Figure 12**

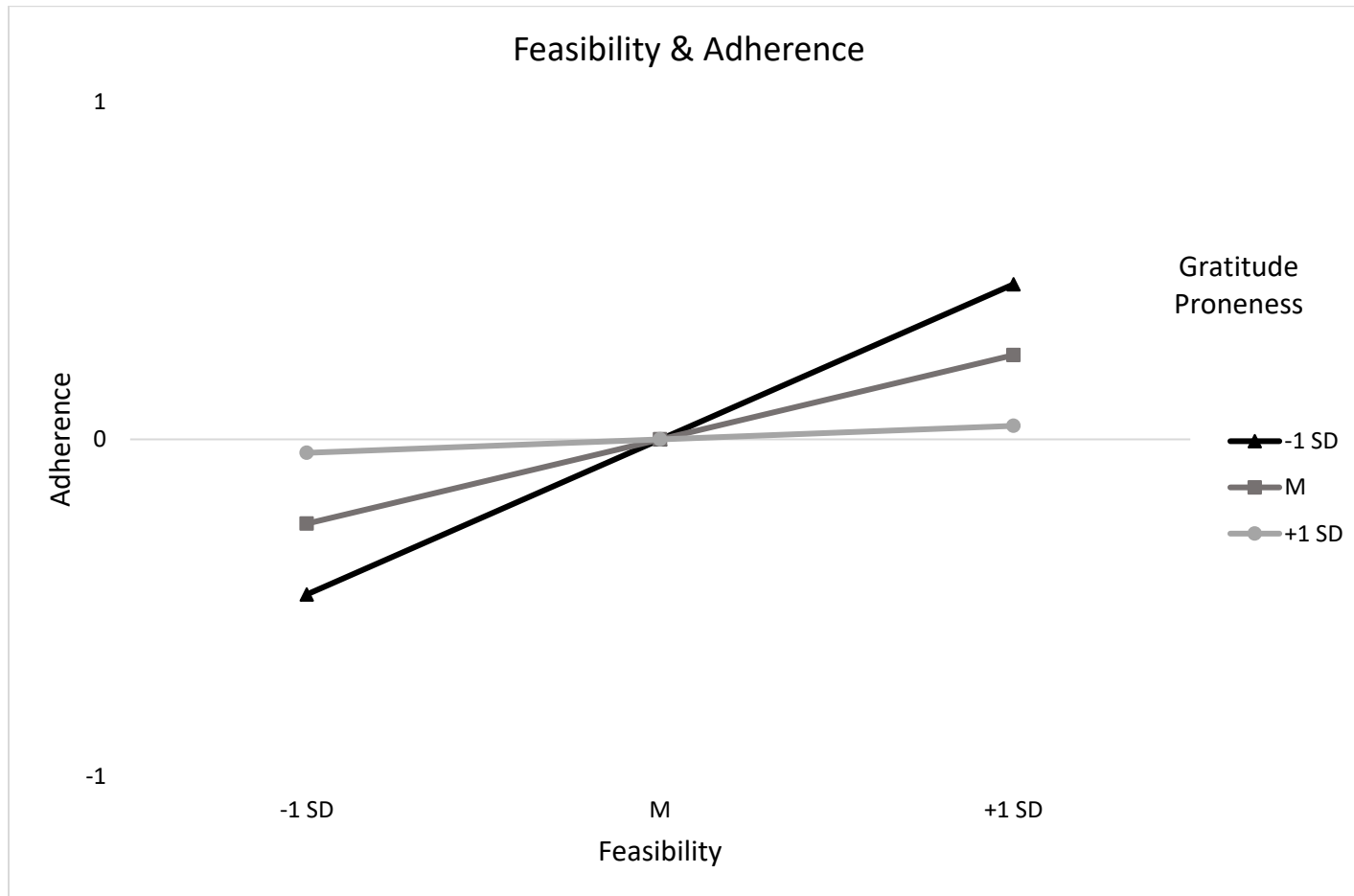
*Plot for Interaction between Gratitude Proneness and Negative Face Threat Predicting Gratitude*



*Note.* All variables are standardized. The Y-axis reflects standardized gratitude scores. The X-axis reflects standardized negative face threat scores.

**Figure 13**

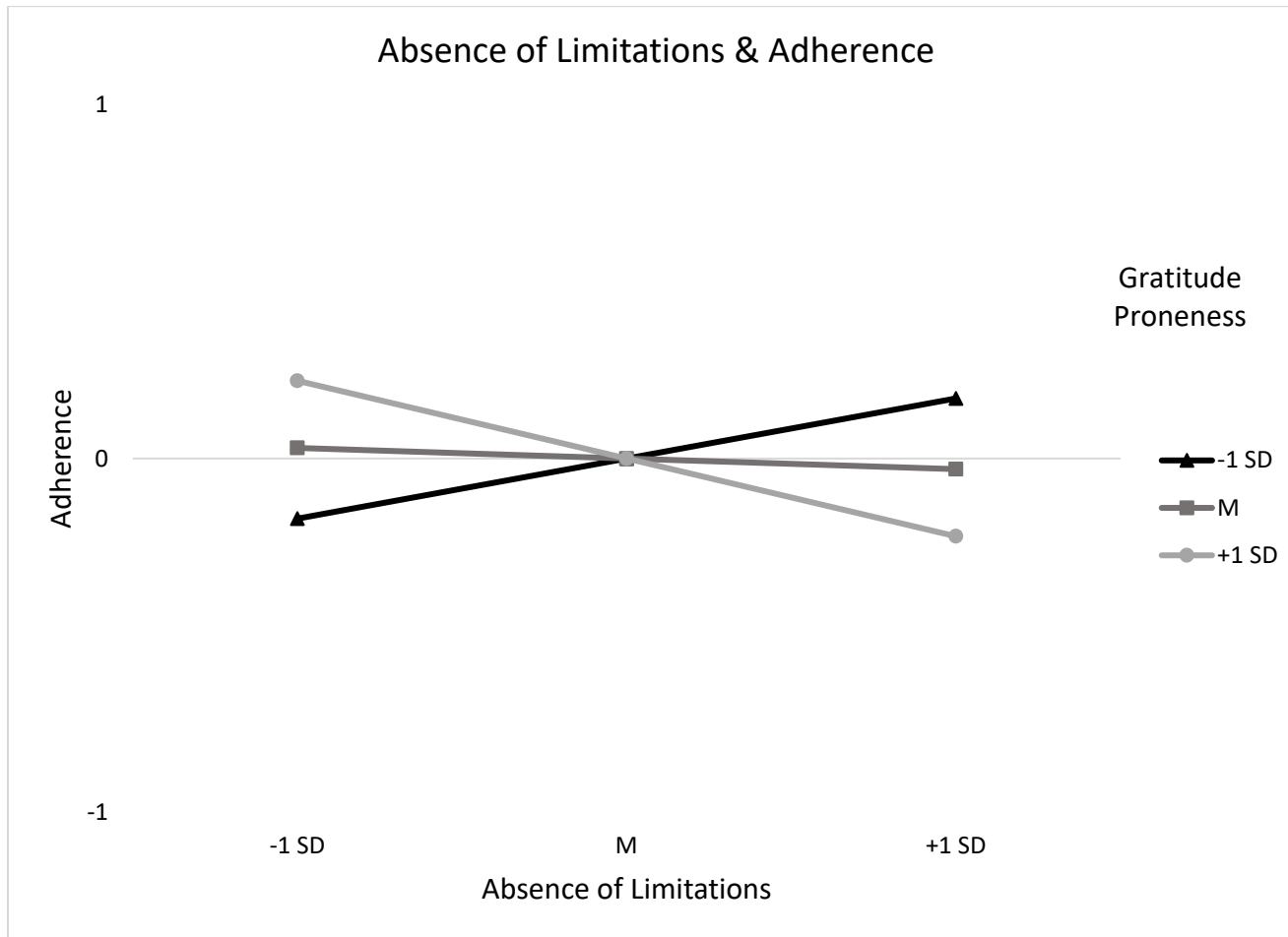
*Plot for Interaction between Gratitude Proneness and Feasibility Predicting Adherence*



*Note.* All variables are standardized. The Y-axis reflects standardized adherence scores. The X-axis reflects standardized feasibility scores.

**Figure 14**

*Plot for Interaction between Gratitude Proneness and Absence of Limitations Predicting Adherence*



*Note.* All variables are standardized. The Y-axis reflects standardized adherence scores. The X-axis reflects standardized absence of limitations scores.

## Chapter 5: Discussion

Chronic pain is a substantial health concern for over 50 million Americans that necessitates the provision of self-management advice from health care providers to patients (Barlow et al., 2002; Dorflinger et al., 2013; IoM, 2011). Self-management advice is only effective if patients positively evaluate and choose to implement the advised self-management strategies (Bair et al., 2009; Fordyce, 1976; McCracken, 1998). Patients' emotional responses are important indicators of how they have positively or negatively evaluated advice and whether they are likely to adhere to their providers' recommendations (Feng et al., 2011; Lazarus, 1991; MacGeorge et al., 2004; MacGeorge, Guntzviller, et al., 2016). Although the IoM (2011) and other key stakeholders have called for providers to implement patient-centered communication strategies such as encouraging patients to engage in exercise and other self-management efforts, chronic pain patients frequently report discouraging communication from their health care providers (e.g., Kenny, 2004; Pryma, 2017; Upshur et al., 2010). This dissertation project is the first study to systematically explicate and test a model of how chronic pain patients appraise and respond to various self-management advice messages and providers' encouraging and discouraging communication behaviors based on their recall of past clinical consultations.

I developed and tested a theoretical model by synthesizing theories of advice message processing, including ART and IMMA (Feng et al., 2011; MacGeorge, Guntzviller, et al., 2016), with appraisal theories of emotion and psychological research on the role of emotions in advice-taking (de Hooge et al., 2014; Gino & Schweitzer, 2008; Lazarus, 1991; Tracy & Robins, 2007b). ART and IMMA address how patients' perceptions of patient-provider relationships and advice message features relate to advice outcomes such as satisfaction and adherence, but neither theory addresses the role emotions may play as links between cognitive appraisals of advice and

advice outcomes (see also Guntzviller & Bigsby, 2020; Paik, 2020). Appraisal theories state that cognitions cause emotions and emotions motivate actions (see Lazarus, 1991; Tracy & Robins, 2007b), warranting inclusion of emotions as mediators between cognitive appraisals and outcomes in ART and IMMA. The social emotions included in the model represent likely positive responses (i.e., gratitude, alpha pride, beta pride) to encouraging communication recommended by the IoM (2011), and negative responses (i.e., reactance, shame, guilt) to the discouraging communication reported by chronic pain patients (Kenny, 2004; Pryma, 2017; Upshur et al., 2010). The model is also one of the first to include perceptions of face-threatening and freedom-threatening communication as predictors of advice outcomes (see also Guntzviller & Bigsby, 2020; Paik, 2020), and the first to distinguish shame from guilt and alpha pride from beta pride with regard to advice-taking (cf. de Hooge et al., 2014).

Because the model is novel, I conducted an initial cross-sectional test using an online survey. I collected data from 208 people with chronic pain who had recently received self-management advice from a provider (i.e., within approximately six months prior to completing the survey). I recruited through the Prolific platform, a reputable organization that vets participants to improve the quality and validity of responses to studies. I designed the survey such that constructs were assessed in the time order outlined in the theoretical model. I helped participants remember the specific health care provider they were reporting on by repeating the provider's title and initial in the relevant instructions and questionnaire items. I promoted participants' recall of the advice message(s) they were reflecting on by pinning their descriptions of the advice message(s) to the top of every page that included items about participants' advice evaluations. I also included a timer that encouraged participants to carefully reflect on the

conversation for 30 seconds before reporting their emotional responses (see Ekman et al., 1983). These methodological choices were intended to improve the validity of the project.

Findings suggest that optimizing patients' positive responses to and utilization of self-management advice requires attending to chronic pain patients' thoughts and feelings in both theory and practice. Results indicate that patients' desires for advice (i.e., receptiveness) and beliefs that they are capable of performing advised self-management strategies (i.e., feasibility) are related to whether they adhere to providers' recommendations, and reports of gratitude are associated with greater patient satisfaction with care. I next translate findings about the appraisals and emotions that may be most critical in encouraging chronic pain patients to accept and implement self-management advice. I then make recommendations for refining and synthesizing ART (MacGeorge, Guntzviller, et al., 2016), IMMA (Feng et al., 2011), and PRT (Brehm & Brehm, 1981). I subsequently provide theory-driven recommendations for improving chronic pain management practices. Finally, I detail strengths and limitations of the present study and propose directions for future research to help address remaining knowledge gaps about chronic pain patients' self-management advice processing.

## **Overview of Findings**

Results provide mixed support for the theoretical model presented in Figure 1. According to the model, patients' trust in their provider predicts their receptiveness to advice, which in turn predicts higher ratings of advice content and prosocial style and lower ratings of antisocial style. The model proposes that advice message feature appraisals have variant relationships with the six social emotions of interest (i.e., reactance, gratitude, shame, guilt, alpha pride, beta pride). Based on the model, positive emotions are positively associated with patient satisfaction, negative emotions are negatively associated with patient satisfaction, and each emotion has a

distinct relationship with adherence intentions based on its action tendency. The model allows for both direct and indirect relationships between all predictors and advice outcomes. In general, the model predicts that patients who trust their providers are more receptive to advice and will perceive more positive and less negative communication from their providers, experience more positive and less negative emotions, and report better advice outcomes.

In this section, I revisit the hypotheses and research questions with an emphasis on their real-world translations and implications. I emphasize how results both support and challenge the proposed theoretical model and contextualize findings within extant theories and empirical research. I first address hypotheses and research questions about mediated relationships consistent with extant tests of ART (e.g., Guntzviller, Ratcliff, et al., 2017; Guntzviller, Wang, et al., 2020; MacGeorge, Guntzviller, et al., 2016), then discuss the additional mediating roles of conversation-induced emotions, and finally consider the moderating roles of recipient stable traits (Bodie & MacGeorge, 2022).

### ***Relationships Between Trust and Message Feature Appraisals Through Receptiveness***

The first set of research questions and hypotheses investigated direct and indirect relationships among patient trust, receptiveness, and advice message feature appraisals (RQ1, H1–H2). RQ1 asked if patient trust has direct associations with advice message feature appraisals or only indirect associations as mediated by receptiveness. Trust had direct relationships with all advice message feature appraisals in the predicted directions. Receptiveness only mediated the relationships between trust and response efficacy and between trust and negative facework. Results suggest trust may tend to directly correspond with higher ratings of advice content and prosocial style and lower ratings of antisocial style irrespective of receptiveness. I offer explanations for each (in)direct relationship in response to H1 and H2.

H1 proposed that patient trust is positively associated with advice content and prosocial advice style appraisals as mediated by receptiveness. As previously mentioned, receptiveness only mediated the relationships between trust and response efficacy and between trust and negative facework. All other relationships between trust and message feature appraisals were direct. One plausible explanation for the link between receptiveness and response efficacy appraisals is that wanting advice (i.e., receptiveness) means patients also want the advice to be effective and consequently are more likely to think a provider's solution will be effective (i.e., response efficacy). Indeed, Babrow (2001) details how people tend to be biased toward believing what they want to be true is more likely to be true, such as believing that their probability of surviving a surgery is better than average (see also Babrow et al., 1998). Patient receptiveness may therefore be an important indicator of whether patients believe providers' self-management strategies will help them effectively manage their pain.

Receptiveness may relate to higher negative facework ratings because patients who want advice feel their goals are achieved when providers offer advice and consequently perceive providers are more respectful of their right to choose (i.e., negative facework). Past research documents that patients tend to be more satisfied with care when their provider adapts to patients' preferred level of involvement in medical decision-making and adopts a less controlling communication style (see review by Frantsve & Kerns, 2007). Contextualized within this literature, findings suggest patients' receptiveness to advice might be an important indicator of whether they will view advice as respectful of their autonomy and experience more satisfaction with care (although the link between receptiveness and patient satisfaction was direct rather than indirect through negative facework; see findings for RQ2b).

The finding that trust shared direct relationships with feasibility, absence of limitations, and positive facework is supported by extant literature. Patients' beliefs that (a) providers lack expertise (i.e., a component of trust; see Anderson & Dedrick, 1990; Feng & MacGeorge, 2010) in non-pharmacological pain management techniques (e.g., mindfulness, yoga), (b) non-pharmacological strategies are difficult and time consuming to implement (i.e., low feasibility), and (c) non-pharmacological strategies cause worse pain (i.e., presence, not absence, of limitations or side effects) are all documented barriers to effective pain management (Becker et al., 2017). Conversely, patients' trust in their providers, providers' efforts to tailor self-management strategies to each unique patient (e.g., improve feasibility), providers' communication about the risks and benefits of self-management strategies (e.g., discussion of limitations or side effects), and providers' expressions of compassion or empathy (e.g., positive facework) are facilitators of chronic pain management (Bair et al., 2009; Becker et al., 2017). Results support and extend these findings by indicating patient trust may be a pathway to improved ratings of the feasibility and absence of limitations of self-management recommendations and positive facework during patient-provider interactions (see also Street et al., 2009).

H2 proposed trust is negatively associated with antisocial advice style appraisals as mediated by receptiveness. Trust was negatively associated with all antisocial advice style appraisals (i.e., positive face threat, negative face threat, freedom threat). However, receptiveness did not mediate any of the relationships between trust and antisocial advice style appraisals. It is possible that wanting advice from a health care provider does not necessarily mean patients will overlook face-threatening or freedom-threatening messages from their provider (e.g., because unsupportive provider communication makes self-management more difficult for patients; Bair

et al., 2009; Matthias & Bair, 2010; Upshur et al., 2010). Rather, trust may negatively relate to face threat and freedom threat perceptions because patients recognize their provider is looking out for their best interests and may be less likely to perceive strong recommendations as face threatening or freedom threatening (see D'Angelo & D'Angelo, 2018).

Results for RQ1 and H1–H2 overall indicate that patient trust tends to directly correspond with more positive patient perceptions of the provider's self-management recommendations. At the same time, it appears part of the reason patient trust is related to stronger perceptions that the self-management strategy will effectively manage pain (response efficacy) and that the provider communicated in a way that respected the patient's right to choose how the patient manages their own pain (negative facework) is because patients who report more trust in their providers also report higher receptiveness to their advice. This aligns with theoretical propositions that trust and receptiveness are important predictors of advice message feature appraisals and suggests trust may be the more influential predictor of advice message feature appraisals. Results only partially support Guntzviller et al.'s (2019) conceptualization of proximal and distal predictors of message feature evaluations in ART. Nevertheless, the consistent positive relationships trust shares with advice content and prosocial advice style appraisals, as well as the consistent negative relationships between trust and antisocial style appraisals, reaffirm the importance of establishing trust and rapport prior to giving patients medical recommendations. Previous research indicates trusting relationships with providers and prosocial messages from providers help patients effectively manage their pain, whereas strained relationships with providers and antisocial messages from providers may hinder their self-management efforts (e.g., Bair et al., 2009; Matthias & Bair, 2010; Upshur et al., 2010).

### *Relationships Between Antecedents and Outcomes Through Message Feature Appraisals*

The next set of research questions and hypotheses tested the relationships trust and receptiveness share with advice outcomes through message feature appraisals (RQ2, H3–H4). RQ2a asked if the positive associations between patient trust and advice outcomes are direct or only indirect as mediated by message feature appraisals. Trust had positive indirect relationships with adherence intentions through feasibility and freedom threat. Patient trust in their health care provider may correspond with increased intentions to follow through with recommended self-management strategies because trust, in part, accounts for increased perceptions that they are capable of carrying out the advised actions. This aligns with literature linking trust to positive patient beliefs about self-management and improved health outcomes (Bair et al., 2009; Becker et al., 2017; Frantsve & Kerns, 2007). Trust similarly appears to buffer the negative association freedom-threatening language shares with patients' intentions to follow providers' self-management guidelines (i.e., the direct association between freedom threat and adherence is negative, but the indirect relationship between trust and adherence through freedom threat is positive). Ample literature supports links between trust, decreased frustration and hostility in patient-provider interactions, and increased adherence to pain management recommendations (see Frantsve & Kerns, 2007; Matthias, Parpart, et al., 2010). Thus, it appears trust may indirectly predict stronger intentions to follow providers' self-management advice through its relationships with higher ratings of feasibility and lower ratings of freedom threat, partially supporting the theoretical model.

Contrary to predictions, trust had a negative indirect relationship with patient satisfaction through positive face threat. Although trust was negatively associated with positive face threat, because the model included a positive association between positive face threat and patient

satisfaction, the lower levels of positive face threat at higher levels of trust corresponded with lower levels of patient satisfaction. Theoretically, trust should mitigate the negative influence of positive face threat appraisals on patient satisfaction. It is possible that, after accounting for the variance explained by negative emotional reactions such as reactance and shame, patients may concurrently recognize the value of criticism (i.e., positive face threat) in helping them improve their self-management behaviors. However, this finding conflicts with a great deal of literature that links empathic and encouraging provider communication to better pain management outcomes (e.g., satisfaction; Bair et al., 2009; Becker et al., 2017; Frantsve & Kerns, 2007). It is also plausible that this relationship is an artifact of low levels and little variation in patients' reports of positive face threat (see Table 4). This unexpected finding should be interpreted with caution and warrants further empirical testing.

RQ2b asked if the positive relationships between receptiveness and advice outcomes are direct or only indirect as mediated by advice message feature appraisals. Receptiveness was positively associated with both patient satisfaction and adherence intentions. Message feature appraisals did not mediate these associations. Receptive patients may be more satisfied with and more likely to implement self-management advice irrespective of their perceptions of message content and politeness. This result aligns with Guntzviller, Wang, et al.'s (2020) finding that receptiveness is a direct predictor of whether people intend to implement exercise advice. However, results differ insofar as the message feature appraisals receptiveness was associated with (i.e., response efficacy and negative facework) were not associated with advice outcomes (cf. Guntzviller, Wang, et al., 2020). It is currently unclear the extent to which receptiveness is directly and indirectly associated with advice outcomes across health contexts, but results

suggest receptiveness is likely a direct predictor of adherence intentions in the context of chronic pain self-management advice.

H3a predicted positive relationships between advice content appraisals and advice outcomes. Only feasibility was positively associated with adherence intentions. No other advice content appraisals were directly associated with advice outcomes, so H3a was partially supported. It is unsurprising that patients who reported the advised action was something they were personally capable of doing (i.e., feasibility) also reported higher intentions to follow their provider's guidance (i.e., adherence intentions). Many theories uphold the importance of self-efficacy in enacting health behaviors (e.g., Ajzen, 1985; Feng et al., 2011; Rosenstock, 1960; Rosenstock et al., 1988; Witte, 1992), and researchers have documented positive relationships between self-efficacy and adherence to medical recommendations for managing chronic conditions (e.g., Martos-Mendez, 2015; Nicholas & Blyth, 2016). Results further support the link between self-efficacy and action in the context of chronic pain self-management advice.

H3b predicted positive relationships between prosocial advice style appraisals and advice outcomes. Because prosocial advice style appraisals were not associated with advice outcomes, H3b was not supported. The null association between positive facework and patient satisfaction is likely accounted for by its indirect association with patient satisfaction through gratitude (discussed in the next section). It is conceivable that negative facework is not directly associated with patient satisfaction because patients vary in their preference for whether they want their doctor to give them choices or make medical decisions for them (see D'Angelo & D'Angelo, 2018). The null associations between prosocial advice style appraisals and adherence intentions are compatible with ART predictions. Specifically, ART proposes that advice content appraisals are more strongly associated with behavioral outcomes (e.g., adherence), whereas prosocial

advice style appraisals are more strongly associated with affective outcomes (e.g., satisfaction; see Bodie & MacGeorge, 2022; MacGeorge, Guntzviller, et al., 2016). Thus, results call into question if negative facework operates as predicted by ART in the context of self-management advice from health care providers, but generally support ART predictions about which advice outcomes are likely predicted by perceptions of facework.

H4 predicted negative associations between antisocial advice style appraisals and advice outcomes. All three antisocial advice style appraisals were associated with one of the two advice outcomes, but not always in the predicted directions. As hypothesized, freedom threat was negatively associated with adherence intentions. Unexpectedly, positive face threat was positively associated with patient satisfaction. I noted the positive relationship between positive face threat and patient satisfaction previously in the section concerning mediated relationships between trust and patient satisfaction through positive face threat. Again, this result should be interpreted with caution due to low average reports and little variation in positive face threat perceptions (see Table 4). Also counter to predictions, negative face threat was positively associated with adherence intentions. The positive association between negative face threats and adherence intentions triangulates extant literature that documents how certain patients prefer providers to make medical decisions for them and links clear instructions with increased satisfaction and adherence (see D'Angelo & D'Angelo, 2018; Hirsch et al., 2005). At the same time, negative face threat perceptions were subject to the same limitations of low average reports and little variation as positive face threat perceptions (see Table 4), so this result should be interpreted with caution.

### ***Relationships Between Message Feature Appraisals and Outcomes Through Social Emotions***

The next set of research questions and hypotheses investigated relationships between message feature appraisals and outcomes as mediated by social emotions (RQ5, H5–H25). RQ5 questioned if advice message feature appraisals have direct associations with advice outcomes or only indirect associations as mediated by social emotions. Reactance, shame, guilt, alpha pride, and beta pride did not mediate the associations between advice message feature appraisals and outcomes, although these emotions were associated with multiple message feature appraisals and patient satisfaction. Gratitude mediated the associations that response efficacy, positive facework, and negative face threat shared with patient satisfaction. No emotions were associated with adherence intentions.

In general, the data suggest emotions may be mediators between appraisals of advice conversations and advice outcomes, but substantial evidence is only present for gratitude. Moreover, these data do not support the central claim of appraisal theories that emotions are the most proximal predictors of behavior (Lazarus, 1991; Roseman & Smith, 2001). Given the retrospective nature of this cross-sectional test, the findings do not necessarily indicate that emotions are not important predictors of behavior. Emotions are immediate, intense, and fleeting responses to events and may not be experienced as intensely when retrospectively recalled as opposed to experienced immediately following a health care consultation (see Nabi, 2010). This may explain why average ratings for each emotion fell below the scale midpoint, with the exception of gratitude (see Table 4). Regardless, emotions do appear to be indicators of whether and why chronic pain patients are (not) satisfied with health care.

**Relationships Between Message Feature Appraisals and Outcomes Through Reactance.** H5–H7 addressed associations among advice message feature appraisals, reactance,

and advice outcomes. H5 proposed negative associations between (a) response efficacy and reactance and (b) prosocial advice style appraisals and reactance. Only response efficacy was negatively associated with reactance. The negative relationship between response efficacy and reactance aligns with predictions and complements Guntzviller, Ratcliff, et al.'s (2017) finding that response efficacy is positively associated with advice outcomes even when feasibility and absence of limitations are associated with worse advice outcomes. Perceptions that a solution is highly effective might reduce reactance, possibly by refuting patients' internal counterarguments (see Quick et al., 2013).

H6 predicted positive associations between (a) feasibility appraisals and reactance, (b) absence of limitations appraisals and reactance, and (c) antisocial advice style appraisals and reactance. Only positive face threat was positively associated with reactance. The positive relationship between positive face threat and reactance aligns with recent studies (e.g., Dorrance-Hall et al., 2021; Guntzviller & Bigsby, 2020). Counter to predictions, absence of limitations was negatively associated with reactance. The negative association between absence of limitations and reactance contrasts Guntzviller, Ratcliff, et al.'s (2017) reports of a negative association between absence of limitations and coping. Moreover, this finding does not support Guntzviller, Ratcliff, et al.'s conjecture that the negative association between absence of limitations and coping might be explained by appeals to absence of limitations inducing reactance to health advice. It is plausible that the discrepancy in findings can be explained by the difference between the parent-child relationships Guntzviller, Ratcliff, et al. investigated and the patient-provider relationships investigated here. That is, appeals to absence of limitations might function differently for advice from a health care provider to a chronic pain patient compared to advice from a parent to an adult child. In the context of self-management advice, appeals to absence of

limitations might correspond with less reactance because the health care provider is acknowledging they have thought about and minimized negative side effects (e.g., “I recognize the exercises are going to hurt at first, but in a few days, you’ll be in less pain than you are now”), consequently lessening patients’ concerns and resistance.

Surprisingly, freedom threat appraisals were not consistently associated with reactance, although freedom threat appraisals were negatively associated with adherence intentions. Quick et al. (2015) reported a similar pattern of relationships in a sample of American adults who were exposed to persuasive messages about organ donation. Specifically, although the Quick et al. found a positive relationship between freedom threat and reactance, the researchers also reported a nonsignificant association between reactance and attitudes about organ donation and a negative association between freedom threat perceptions and attitudes. Quick et al. posit that the null relationship between reactance and outcomes as well as the direct relationship between freedom threat perceptions and outcomes might be explained by low levels of perceived freedom threat in their sample. Average freedom threat perceptions were relatively low (see Table 4), so the same observation might hold true in this sample. Furthermore, a plausible explanation for the lack of support for the prediction that freedom threat appraisals are associated with reactance is that positive face threat appraisals accounted for a large portion of the variance in reactance, potentially reducing the variance explained by freedom threat appraisals. Findings for H6 generally indicate providers should be mindful of both insulting language and aggressive commands when advising patients on how to manage their chronic pain because inflammatory language can potentially induce reactance and resistance to medical recommendations (D’Angelo & D’Angelo, 2018; Matthias & Bair, 2010).

H7 posited negative associations between reactance and advice outcomes. Reactance was negatively associated with patient satisfaction, but not adherence intentions. Reactance is a specific form of anger, and anger has been associated with less effective shared decision-making between chronic pain patients and their providers (see review by Frantsve & Kerns, 2007). It is logical that patients would report less satisfaction with a consultation that does not lead to high-quality decisions about managing their pain (see Street et al., 2009). The null association between reactance and adherence is surprising because extant literature posits that reactance should negatively predict adherence to medical recommendations (D'Angelo & D'Angelo, 2018), and emotions should be more proximal predictors of behavior compared to cognitions alone (Lazarus, 1991). Further testing is necessary to understand when and how reactance may predict nonadherence to self-management advice.

Findings for H5–H7 support and challenge research on reactance to health advice. The positive association between positive face threats and reactance reinforces recent advice research detailing similar associations (e.g., Dorrance-Hall et al., 2021; Guntzviller & Bigsby, 2020). The null relationships between freedom threat and reactance as well as between reactance and adherence intentions do not align with expectations about the role of reactance in health behavior change (see Quick et al., 2013). Additional theorizing and empirical testing are necessary to fully explicate the relationships among face threats, freedom threats, reactance, and health behaviors. I address these issues in greater detail later in this chapter in the section concerning theoretical implications for PRT. At the very least, findings suggest that both positive face threats and freedom threats may be detrimental to chronic pain patients' affective responses and adherence to self-management advice. Providers should avoid these speech acts during clinical consultations.

### **Relationships Between Message Feature Appraisals and Outcomes Through**

**Gratitude.** H8–H10 elaborated relationships between advice message feature appraisals, gratitude, and advice outcomes. H8a anticipated that advice content appraisals are positively associated with gratitude. Response efficacy and feasibility were positively associated with gratitude, but absence of limitations was not. H8a was partially supported. Believing a self-management strategy will effectively reduce pain (i.e., response efficacy) and perceiving the strategy is something the patient has the skills and resources to enact (i.e., feasibility) both align with the goal of pain management. Gratitude is characterized by acknowledging another person has helped the beneficiary achieve an important goal (see Lazarus, 2006; McCullough et al., 2001). Thus, it is likely the case that response efficacy and feasibility share consistently positive relationships with gratitude in the context of chronic pain self-management advice. It is also possible that chronic pain patients are aware that nearly all self-management strategies and other treatment decisions come with potential drawbacks and side effects (see Becker et al., 2017; Feng et al., 2011), so they are grateful for new suggestions regardless of drawbacks.

H8b predicted positive relationships between prosocial advice style appraisals and gratitude. Positive facework was positively associated with gratitude, but negative facework was not. Accordingly, H8b was partially supported. The positive relationship between positive facework and gratitude triangulates extant research documenting how chronic pain patients appreciate compliments and encouragement from health care providers (e.g., Bair et al., 2009; Matthias, Bair, et al., 2010). Given that some patients prefer direct instructions over choosing options (see D'Angelo & D'Angelo, 2018), negative facework perceptions may not be consistently associated with gratitude (e.g., the relationship may only exist for patients whose preferences align with negative facework).

H9 predicted negative associations between antisocial advice style appraisals and gratitude. The positive relationships between negative face threat and gratitude and between negative face threat and patient satisfaction were unexpected. Perhaps patients appreciate when providers make it clear to them what advice the provider thinks the patient should follow (see also D'Angelo & D'Angelo, 2018; Hirsch et al., 2005). Perceiving a provider made a decision for the patient aligns with how negative face threat was operationalized. However, as noted previously, negative face threat perceptions were limited to low average reports and little variation (see Table 4), so this indirect effect should similarly be interpreted with caution.

H10 proposed positive associations between gratitude and advice outcomes. Gratitude was strongly associated with patient satisfaction but was not associated with adherence intentions. The positive association between gratitude and patient satisfaction reaffirms the importance of gratitude in improving advice outcomes (see review by Van Swol et al., 2018). Moreover, positive associations between gratitude and patients' satisfaction with care complement the literature linking gratitude to improved health outcomes in chronic pain management (e.g., decreased depression and anxiety; see Ng & Wong, 2012).

Taken together with extant literature, findings from H8–H10 indicate that gratitude may play three roles in patient–provider communication about chronic pain self-management. First, gratitude appears to be a proximal outcome of positive communication from providers (e.g., positive facework, such as compliments and encouragement, predicts gratitude; Bair et al., 2009; P. Brown & Levinson, 1987; Street et al., 2009). Second, gratitude may be a predictor of intermediate outcomes (e.g., gratitude predicts satisfaction with care; Jiang, 2019; Street et al., 2009). Third, gratitude may be a predictor of health outcomes (e.g., emotional well-being) in chronic pain management (Jiang, 2019; Ng & Wong, 2012; Street et al., 2009).

### **Relationships Between Message Feature Appraisals and Outcomes Through Shame.**

H11–H13 focused on associations between advice message feature appraisals, shame, and advice outcomes. H11 proposed negative associations between (a) advice content appraisals and shame and (b) prosocial advice style appraisals and shame. Only absence of limitations and positive facework were negatively related to shame. It may be the case that advice without drawbacks or side effects reduces patients' perceptions that nothing can be done about their pain without negative consequences, countering shame-relevant cognitions (Tangney & Dearing, 2002). Positive facework includes compliments and praise (P. Brown & Levinson, 1987), and affirmations challenge perceptions that patients are small, worthless, or bad people (Tangney & Dearing, 2002). Indeed, teaching chronic pain patients to practice self-compassion has been shown to reduce self-criticism and shame as well as overcome reluctance to engage in self-management strategies (Purdie & Morley, 2016). Results supplement extant research and suggest provider communication that focuses on overcoming negative side effects and highlighting patients' positive qualities may mitigate shame and improve satisfaction with self-management advice.

H12 predicted positive associations between antisocial advice style appraisals and shame. However, no antisocial advice style appraisals were associated with shame. The null association between positive face threats and shame is particularly surprising given extant reports that blame and criticism lead patients to feel ashamed (e.g., doctors implying patients are drug-seekers or have personality disorders; Bergman et al., 2013; Butow & Sharpe, 2013; Upshur et al., 2010; Werner et al., 2004). At the same time, the zero-order correlation between positive face threat and shame was strong and positive (see Table 4), and, as previously mentioned, the structural model yielded unexpected patterns of relationships between positive face threat appraisals and

other variables (e.g., a positive association between positive face threat and patient satisfaction). Moreover, evidence suggests this sample might have been biased toward satisfied patients who did not report high levels of positive face threats or shame (see Chapter 3). It is reasonable to anticipate positive face threats may positively predict shame when analyzing less satisfied samples of chronic pain patients (e.g., Pryma, 2017; Upshur et al., 2010; Werner et al., 2004).

H13 posited negative associations between shame and advice outcomes. Shame was negatively associated with patient satisfaction but not adherence intentions. For chronic pain patients, shame often corresponds with mental defeat (e.g., Turner-Cobb et al., 2015), and feeling defeated is unlikely to correspond with perceptions that a clinical consultation was high-quality and satisfying. Although shame is characterized by feeling powerless and believing nothing can be done to ameliorate a problem (see Tangney & Dearing, 2002), it appears shame did not predict lower intentions to follow providers' self-management recommendations in this sample. The average report of shame was 1.67 on a 5-point scale (see Table 4), so it is possible that higher levels and more variation in shame might reveal negative associations with adherence intentions (e.g., because shame is inversely associated with self-efficacy and motivation to act; Tangney & Dearing, 2002).

Results reaffirm the importance of combining advice and encouragement to mitigate shame and promote effective chronic pain self-management (Bair et al., 2009; Hoffman et al., 2002). Affirmations and encouragement (i.e., positive facework) correspond with less shame, and shame appears to be an indicator of (dis)satisfaction with care. Moreover, although shame was not associated with adherence intentions, extant research links shame to less effective pain self-management and worse health outcomes such as inflammation and disability (e.g., Dickerson et al., 2004; Gruenewald et al., 2004; Turner-Cobb et al., 2015). Results likely reflect

only part of the role shame plays in predicting chronic pain patients' self-management advice processing, utilization, and outcomes.

### **Relationships Between Message Feature Appraisals and Outcomes Through Guilt.**

RQ3 and H14–H17 detailed differential associations among advice message feature appraisals, guilt, and advice outcomes. RQ3 asked if advice content appraisals are associated with guilt. Only absence of limitations was negatively associated with guilt. Perhaps it is the case that perceiving there will not be drawbacks to an advised solution helps patients anticipate less regret for taking the advised action, translating to less guilt (Tangney & Dearing, 2002).

H14 predicted prosocial advice style appraisals are negatively associated with guilt. However, no prosocial advice style appraisals were associated with guilt. Based on the results, complimenting patients (i.e., positive facework) and empowering patients to decide how they manage their pain (i.e., negative facework) may not be sufficient to alleviate guilt experienced in a pain management setting. Guilt drives people to repair damage caused by their past behavior by engaging in corrective behaviors (see Tangney & Dearing, 2002). Rather, effectively adhering to self-management advice might be the key to alleviating feelings of guilt (e.g., for previously failing to follow medical guidance), although this is speculative without supporting empirical evidence.

H16 predicted a negative association between guilt and patient satisfaction, whereas H17 predicted a positive association between guilt and adherence intentions. Counter to predictions, guilt was not associated with either advice outcome. These findings do not support theoretical propositions about guilt motivating increased adherence to self-management advice and negatively impacting patients' satisfaction with care. At the same time, these findings challenge de Hooge et al.'s (2014) assertion that shame or guilt both negatively impact advice-taking,

because shame was associated with lower patient satisfaction, but guilt was not. Given that shame and guilt are often experienced together but shame is often experienced more intensely (see Tangney & Dearing, 2002), it could be that including shame and guilt in the same model meant variance explained by shame reduced variance explained by guilt. Regardless, shame and guilt do not appear to operate identically in chronic pain patients' self-management advice message processing.

Findings related to RQ3 and H14–H17 suggest the role of guilt in chronic pain patients' self-management advice processing may be limited. Although providers might be able to minimize patients' feelings of guilt by thoroughly exploring and overcoming the negative side-effects of self-management recommendations (i.e., absence of limitations), it is unclear if alleviating guilt is beneficial to patients given that guilt was not associated with either advice outcome. Further testing is necessary to understand if and how guilt may factor into chronic pain self-management advice processing and outcomes.

**Relationships Between Message Feature Appraisals and Outcomes Through Alpha Pride.** H18–H22 predicted relationships between advice message feature appraisals, alpha pride, and advice outcomes. H18 predicted negative relationships between (a) response efficacy and alpha pride and (b) absence of limitations and alpha pride. H19 predicted positive associations between (a) feasibility and alpha pride and (b) prosocial advice style appraisals and alpha pride. H20 predicted negative relationships between antisocial advice style appraisals and alpha pride. H21 predicted positive a positive association between alpha pride and patient satisfaction. H22 predicted a negative relationship between alpha pride and adherence intentions. However, there were no statistically significant associations between any variables and alpha pride apart from beta pride, which shared a weak, positive association with alpha pride. Given the extremely low

mean and standard deviation (see Table 4), null associations between alpha pride and other variables are unsurprising. There are two likely explanations for this: either this sample genuinely included people who do not tend to experience alpha pride, or people were reluctant to refer to themselves as “conceited” or “stuck-up” due to social desirability bias. Although I included safeguards against social desirability bias such as maintaining confidentiality, future studies would be well-advised to take additional precautions such as including face-saving alternative wording (Larson, 2019). At present, the role of alpha pride in chronic pain self-management advice processing is unclear.

**Relationships Between Message Feature Appraisals and Outcomes Through Beta Pride.** RQ4 and H23–H25 investigated relationships among advice message feature appraisals, alpha pride, and advice outcomes. RQ4 asked if (a) response efficacy and (b) absence of limitations are associated with beta pride. Response efficacy was positively associated with beta pride. It is plausible that perceiving a self-management strategy is effective means enacting the strategy will help people achieve their goal of improving their pain, thereby adding to their anticipation of goal completion and inducing beta pride (see Carver & Johnson, 2010; Tracy & Robins, 2007b). Results offer preliminary support for a positive relationship between response efficacy appraisals and beta pride in the context of chronic pain self-management advice processing.

H23 proposed positive relationships between (a) feasibility and beta pride and (b) prosocial advice style appraisals and beta pride. As expected, positive facework was positively associated with beta pride. Positive facework includes compliments, so for those patients whose reports of positive facework included perceptions of compliments, beta pride is a plausible response (Tracy & Robins, 2007b). Negative facework was not associated with beta pride.

Patients might judge communication that respects their right to choose how they manage their pain as irrelevant to their skills, abilities, and accomplishments in effectively managing their pain, which would correspond with no relationship between negative facework and beta pride (see Lazarus, 1991; Tracy & Robins, 2007b).

H24 posited negative relationships between antisocial advice style appraisals and beta pride. However, antisocial advice style appraisals were not associated with beta pride. Because beta pride is grounded in controllable actions and goal achievement, criticism may not impede feeling beta pride because people recognize the value of criticism in helping them try new, more effective approaches to self-managing their pain in the future (see Carver & Johnson, 2010; Tracy & Robins, 2007b; Williams & DeSteno, 2009). Put differently, it might be reasonable to expect null associations between perceptions of criticism and beta pride versus positive associations between perceptions of criticism and alpha pride, similar to the way guilt is often not associated with anger whereas shame is often associated with anger (see Tangney & Dearing, 2002; Tracy & Robins, 2007a). However, null associations between alpha pride and other variables preclude comparisons of how alpha and beta pride function in chronic pain patients' self-management advice processing.

H25 proposed positive relationships between beta pride and advice outcomes. However, beta pride was not associated with either advice outcome. Regarding patient satisfaction, it is possible that the strong relationship between gratitude and satisfaction reduced the variance in satisfaction explained by beta pride. Concerning adherence intentions, it might be the case that patients more often experience beta pride after they have successfully adhered to self-management advice (i.e., enacted a goal-congruent behavior) rather than before (Tracy &

Robins, 2007b), although pride motivating adherence is still theoretically possible (see Carver & Johnson, 2010).

Similar to findings regarding guilt, it is unclear if intentionally trying to help patients experience beta pride would benefit chronic pain management practice. Results imply that providers might be able to help patients feel proud of their self-management efforts by offering praise and encouragement (i.e., positive facework), but there is no reason to suspect beta pride is beneficial to chronic pain outcomes given its null associations with patient satisfaction and adherence. Additional tests of the role of beta pride in self-management advice processing could shed light on this issue.

### ***Synthesis of Mediation Findings***

Findings reviewed in the preceding subsections suggest three takeaways regarding chronic pain patients' advice appraisal processes. First, trust in health care providers may promote positive impressions of advice messages and interactions as well as diminish negative perceptions of providers' communication. Second, patients' desires for self-management advice (i.e., receptiveness) as well as patients' perceptions that they can implement the advised self-management strategies (i.e., feasibility) appear to positively predict intentions to adhere to the advised self-management strategies. Finally, reactance and shame may be negative predictors of patient satisfaction, and gratitude may be a positive predictor of patient satisfaction. The direct relationships between trust and advice message features as well as receptiveness and advice outcomes may be a product of the cross-sectional design. Similarly, the null relationships between emotions and adherence intentions might be explained by retrospective recall. Both possibilities echo MacGeorge, Guntzviller, et al.'s (2016) call for longitudinal investigations of ART and, by extension, ART-based models such as the theoretical model presented in this

dissertation. Regardless, patients who have greater trust their health care providers are also more likely to be receptive to self-management advice, and emotions may provide insights about the reasons why patients are more or less satisfied with care.

### ***The Moderating Roles of Sex, Reactance Proneness, and Gratitude Proneness***

The final set of hypotheses and research questions investigated the moderating roles of three recipient stable traits in the relationships advice message feature appraisals share with state emotions and advice outcomes (H26–30, RQ6).

**Sex Moderating Relationships Between Message Feature Appraisals and Outcomes.** H26 proposed that the direct relationships between advice message feature appraisals and advice outcomes are stronger for women than men. There was only one statistically significant interaction such that negative face threat appraisals were negatively associated with satisfaction for male patients, but not female patients. This differs from the statistically significant interaction between sex and advice content appraisals reported by MacGeorge, Guntzviller, et al. (2016) insofar as message features had a statistically significant relationship with outcomes for men rather than women. Moreover, a recent longitudinal test of ART did not find support for the moderating role of recipient sex in the relationships between message feature appraisals and outcomes (Guntzviller et al., 2022). Further testing is needed to determine the extent to which recipient sex moderates the influence of advice message feature appraisals on outcomes. It could be the case that sex reliably predicts differences in patient appraisals and outcomes related to chronic pain self-management advice from providers. It is also possible that sex is an insufficient proxy for more relevant recipient traits such as interpersonal cognitive complexity (cf. Bodie & Burleson, 2008). Performing group comparisons between women and men could shed light on

this issue, but such analyses are not advisable using the relatively small sample size collected for this dissertation.

**Reactance Proneness Moderating Relationships Message Feature Appraisals Share with Reactance and Outcomes.** H27–H28 and RQ6a investigated the moderating role of reactance proneness in associations between message feature appraisals and emotions and message feature appraisals and outcomes. H27 proposed that the positive associations between (a) feasibility and reactance, (b) absence of limitations and reactance, and (c) antisocial advice style appraisals and reactance increase as reactance proneness increases. Reactance proneness moderated the relationship between freedom threat perceptions and reactance, such that freedom threats were negatively associated with reactance at lower levels of reactance proneness and freedom threats were positively associated with reactance at higher levels of reactance proneness. It may be the case that because patients expect to receive “doctors’ orders,” freedom threatening language only induces reactance in patients who are particularly sensitive to being told what to do (i.e., high reactance proneness; see D’Angelo & D’Angelo, 2018).

H28 posited that the negative associations between (a) response efficacy and reactance and (b) prosocial advice style appraisals and reactance decrease as reactance proneness increases. However, no statistically significant interactions supported H28.

RQ6a questioned if reactance proneness moderates any direct relationships between advice message feature appraisals and advice outcomes. There were no statistically significant interactions between reactance proneness and message feature appraisals predicting advice outcomes. In this sample, it appears the moderating role of reactance proneness was limited to the relationship between freedom threat and reactance.

**Gratitude Proneness Moderating Relationships Message Feature Appraisals Share with Gratitude and Outcomes.** H29–H30 and RQ6b examined the moderating role of gratitude proneness in associations between message feature appraisals and gratitude and between message feature appraisals and outcomes. H29 conjectured that the positive associations between (a) advice content appraisals and gratitude and (b) prosocial advice style appraisals and gratitude increase as gratitude proneness increases. As mentioned previously, the relationship between negative face threat and gratitude was unexpectedly positive, and this positive relationship increased as gratitude proneness decreased. One possible explanation is that patients who report high gratitude proneness might be less likely to have a preference for providers making medical decisions for them, whereas patients who indicate lower gratitude proneness might share this preference and therefore be more grateful when providers clearly tell them what they should do to manage their pain. This is speculative and would require measuring patient preferences for providers' decision making and communication styles (see Dorflinger et al., 2013; Frantsve & Kerns, 2007). As with other unexpected findings regarding positive and negative face threats, it is advisable to interpret this interaction with caution until further tests are conducted.

H30 predicted that the negative associations between antisocial advice style appraisals and gratitude decrease as gratitude proneness increases. However, no statistically significant interactions supported H30.

RQ6b questioned if gratitude proneness moderates any direct associations between advice message feature appraisals and advice outcomes. The positive relationship between feasibility and adherence intentions unexpectedly decreased as gratitude proneness increased. It may be the case that high gratitude proneness leads people to be more likely to take advice irrespective of message feature evaluations (e.g., because they focus on providers' positive intentions rather

than their actual messages; see McCullough et al., 2001, 2002). This is compatible with dual process theorizing in ART (e.g., highly gratitude prone patients may heuristically process advice and be more likely to take advice irrespective of content and style; Bodie & MacGeorge, 2022).

### ***Synthesis of Moderation Findings***

The moderation analyses jointly point to the importance of understanding chronic pain patients' psychographics in addition to their demographics. Biological sex moderated one relationship between negative face threat appraisals and patient satisfaction such that there was a negative relationship between negative face threat appraisals and patient satisfaction for males, but not females. While it is possible that this difference is truly accounted for by biological sex (e.g., biological males have evolved to competitively resist social influence; Van Vugt, 2009), other literature indicates gender norms and social roles may explain sex differences in perceptions of face-threatening communication (e.g., Aloia & Solomon, 2017). Measuring gender as a psychological characteristic (e.g., beliefs about gender roles) as well as gender-related psychological constructs such as cognitive complexity, emotional expressiveness, and problem-solving orientation might uncover additional ways gender modifies patients' self-management advice processing (see Bodie & Burleson, 2008; Feng & MacGeorge, 2006).

The partial moderating roles of reactance proneness and gratitude proneness lend credence to speculations about the relatively greater importance of psychological factors rather than biological descriptors. Reactance proneness performed as expected in relation to freedom threats and reactance, but it may only be an important factor in patients' self-management advice processing at particularly high levels (only observed in three participants). Gratitude proneness performed contrary to expectations and, although a positive trait, might mean providers' efforts to emphasize the effectiveness of advice content and deliver the advice in a polite way are more

important for patients who do not have high levels of gratitude proneness. Developing psychological profiles for patients therefore has the potential to help guide how providers deliver self-management advice during consultations.

### ***Synthesis of Mediation and Moderation Findings***

Findings support the general patterns outlined in the model yet also challenge the model in important ways. The propositions that received the most support were trust being positively associated with all message feature appraisals, receptiveness and feasibility being positively associated with adherence intentions, and emotions being positively or negatively associated with patient satisfaction based on their valence. Findings also challenge the utility of emotions in predicting adherence intentions and reveal some unexpected associations between message feature appraisals, emotions, and outcomes. Similarly, results partially support sex as a moderating variable in ART and related theoretical models and further support including psychological characteristics such as reactance proneness and gratitude proneness as moderators. Overall, findings suggest that the most successful self-management advice-giving in clinical consultations likely occurs when the advice: (a) is given by a provider the patient trusts, (b) is provided to a patient who wants advice, (c) is an effective and practical self-management strategy, (d) is framed in respectful and encouraging ways, and (d) is aligned with patients' personality traits.

### **Implications for Theory and Practice**

Considered collectively, the present analyses have several important implications for theory and practice. Various direct, indirect, and moderating relationships support and challenge ART and pinpoint opportunities for theoretical advancement. Statistically significant relationships between social emotions and advice outcomes warrant extensions to the IMMA.

The relationship of positive face threat, but not freedom threat or negative face threat, with reactance as well as the moderating role of reactance proneness have important implications for PRT. Moreover, the relative importance of receptiveness, feasibility, reactance, shame, and gratitude provide targeted guidance for advancing chronic pain management practices. The proceeding sections discuss these implications in more detail.

### *Theoretical Implications*

**Advice Response Theory.** Results indicate multiple opportunities to continue advancing ART. First, there is support for the inclusion of social emotions in ART. Some social emotions mediated the relationships between advice message feature appraisals and advice outcomes. Historically, ART has been extended using research from the psychological paradigm (see Bodie & MacGeorge, 2022). It is only fitting that psychological advice research be further integrated into ART, such as by incorporating conversation-induced emotions. Although the positive associations between face threats, gratitude, and advice outcomes should be interpreted with caution, the findings raise questions about when and why face threats might be beneficial in advice interactions. Emotional responses likely explain instances when face threats have positive effects on advice outcomes (e.g., gratitude for constructive criticism) as well as instances when advice content appraisals or facework might have negative effects on advice outcomes (e.g., feasibility and absence of limitations appeals inducing reactance; see Guntzviller, Ratcliff, et al., 2017; MacGeorge, Guntzviller, et al., 2016). At minimum, findings imply that social emotions may yield more precise understandings of why people are (not) satisfied with advice. The theoretical extension presented in this dissertation can also guide future studies that may uncover a link between advice message processing and advice-taking through emotions.

Findings support and challenge ART predictions concerning the direct and indirect effects of advisor characteristics and recipient receptiveness on message feature appraisals and outcomes. Receptiveness directly predicted advice outcomes, whereas trust was directly associated with all message feature appraisals and indirectly associated with advice outcomes. The results raise questions about the (in)direct influence of antecedents on message feature appraisals and outcomes (MacGeorge, Guntzviller, et al., 2016). As noted by MacGeorge, Guntzviller, et al. (2016), compared to studies that assess message feature appraisals immediately following an advice interaction, retrospective recall tests of ART tend to report weaker direct effects of advisor and relational characteristics on advice outcomes, and stronger indirect effects through message feature appraisals. The present study (i.e., a retrospective recall design) follows this trend insofar as patient trust had statistically significant indirect (but not direct) effects on advice outcomes as mediated by advice message feature appraisals. However, results also challenge this generalization due to receptiveness having direct (but not indirect) effects on advice outcomes. Results indicate that the type of research design (e.g., retrospective recall vs. experimental) is not the only viable explanation for differences in when, why, and how antecedents function as direct and indirect predictors of advice appraisals and outcomes in ART.

Alternatively, the direct and indirect relationships trust and receptiveness share with advice outcomes may depend on whether advice recipients process trust and receptiveness heuristically or centrally (Bodie & MacGeorge, 2022; O’Keefe, 2013; Petty & Cacioppo, 1986). For example, a recipient heuristically processing receptiveness might have thoughts such as, “I want advice (i.e., receptiveness), so I’m going to take your advice (i.e., adherence intentions).” In contrast, a recipient centrally processing trust might think, “You’re an expert (i.e., a component of trust), so your advised solution must be effective (i.e., response efficacy). Since your solution

is effective (i.e., response efficacy), I am going to implement your solution (i.e., adherence intentions).” Note how, in these illustrations, heuristic processing corresponds with direct relationships between trust or receptiveness and outcomes, whereas central processing corresponds with indirect relationships between trust or receptiveness and outcomes through message feature appraisals (see also O’Keefe, 2013 for a discussion of how source characteristics can serve as both heuristic cues and central arguments). As an empirical example, Guntzviller et al. (2022) reported qualitative feedback from advice recipients that indicated some recipients had forgotten the details of the advice conversations after approximately 12 days and relied on their perceptions of the advisor’s expertise to inform their ratings of message feature appraisals. This appeared to manifest quantitatively as direct relationships between trust and response efficacy appraisals and indirect effects of trust on advice outcomes through response efficacy appraisals. Although the connection between Guntzviller et al.’s qualitative and quantitative findings is speculative, there is nonetheless some potential evidence of direct and indirect effects being explained by central and heuristic processing. Results offer additional supporting evidence for this possibility.

Similarly, the fact that patient receptiveness only mediated two relationships between patient trust and advice message feature appraisals challenges the roles of distal and proximal predictors of message feature appraisals proposed by Guntzviller et al. (2019; see also Guntzviller, Wang, et al., 2020). In line with Guntzviller, Wang, et al.’s (2020) model, the proposed model anticipated indirect effects of trust on message feature appraisals through receptiveness. However, trust shared direct relationships with all message feature appraisals, and there were only two indirect effects of trust on response efficacy and negative facework through receptiveness. Guntzviller, Wang, et al. (2020) reported support for receptiveness mediating

relationships between parental expertise and three message feature appraisals (response efficacy, positive facework, negative facework), but similarly reported direct relationships between expertise and the three aforementioned message feature appraisals.

Dual processing again emerges as a promising alternative explanation for patterns of direct and indirect relationships among trust, receptiveness, and message feature appraisals. That is, trust and receptiveness may be more proximal or distal predictors of message feature appraisals depending on how relevant they are to each message content or style feature and whether they consequently operate as peripheral cues or central arguments (see Bodie & MacGeorge, 2022; Petty & Cacioppo, 1986; Petty et al., 1993). Based on the results, patient trust may be more relevant to assessments of feasibility, absence of limitations, and positive facework, whereas receptiveness may be more relevant to evaluations of response efficacy and negative facework. However, these relationships are not generalizable beyond the context of chronic pain self-management advice from health care providers and undoubtedly change across situations and over time (see Petty et al., 1993).

This study also contributes to ART by demonstrating that personality traits may be more viable moderators than advice recipient sex. Patient sex moderated the relationship between negative face threat appraisals and patient satisfaction. Specifically, there was a negative relationship between negative face threat and patient satisfaction for males, but no relationship for females. This is contrary to ART predictions and MacGeorge, Guntzviller, et al.'s (2016) findings because there was a statistically significant relationship between a message feature appraisal and an advice outcome for males, but not females. This finding also diverges from a more recent test of ART that found inconsistent support for the moderating role of sex (Guntzviller et al., 2022). These conflicting findings concerning the presence and direction of

interaction effects based on recipient sex raise questions about whether sex is an appropriate moderator in ART.

Some support was found for the moderating roles of both reactance proneness and gratitude proneness. Reactance proneness functioned as expected insofar as reactance proneness moderated the relationship between freedom threat and reactance, consistent with PRT (see Quick et al., 2013). Gratitude proneness did not function as expected. However, there is a plausible theoretical explanation for why higher gratitude proneness sometimes corresponded with weaker positive relationships between message feature appraisals and outcomes. Highly gratitude prone patients may heuristically process advice because of their trait-like tendency to be grateful for others' altruistic behaviors, weakening associations between message feature appraisals and outcomes (Bodie & MacGeorge, 2022; McCullough et al., 2001, 2002).

Taken together, results of the moderation analyses suggest it could be worthwhile to continue testing the moderating role of recipients' psychological traits in ART, but demographic characteristics may not be appropriate moderators (e.g., sex may be an inconsistent proxy for interpersonal cognitive complexity across samples; cf. Bodie & Burleson, 2008). Other potentially influential recipient characteristics include trait variations of additional social emotions (e.g., shame, guilt, alpha pride, and beta pride) as well as gender-related personality traits such as expressivity and instrumentality (Feng & MacGeorge, 2006). There is also room to investigate if the role of recipient stable traits should remain limited to moderating the influence of message features on advice outcomes or be expanded to include additional roles in ART.

This dissertation draws attention to the potential for multiple roles of recipient stable traits in ART. Bodie and MacGeorge (2022) conceptualize recipient stable traits as strengthening or weakening the influence of advice message feature appraisals on advice outcomes. At the

same time, Feng and MacGeorge (2006) report that recipient stable traits such as emotional expressiveness predict receptiveness to advice. MacGeorge, Smith, et al. (2017) found simultaneous support for situational factors predicting message feature evaluations and moderating the influence of message feature evaluations on advice outcomes. Given that features of the situation and recipient are treated virtually identically in ART (see Bodie & MacGeorge, 2022), the aforementioned studies support the possibility that recipient stable traits can function as both predictors and moderators. The strong correlations between gratitude proneness and advice message feature appraisals provide at least some evidence that gratitude proneness could potentially be modeled as a predictor rather than a moderator. In short, recipient stable traits possibly play both predictive and moderating roles in ART, but this is speculative without additional testing.

Longitudinal tests with multiple control variables are necessary to adequately test potential predictive and moderating roles of recipient stable traits in ART. Statistical methods exist that can account for simultaneous predictive and moderating roles of variables at different time points in the same mediation model (similar to the time structure proposed in ART). However, these approaches necessitate time order be established such that the predictor precedes the mediator, and the mediator precedes the outcome (Valeri & VanderWeele, 2013; VanderWeele, 2016). The techniques also require controlling for potential confounding variables. MacGeorge, Smith, et al. (2017) utilized cross-sectional data with only a few demographic control variables and so did not meet these assumptions. MacGeorge, Smith, et al.'s (2017) findings should therefore be treated as preliminary evidence of simultaneous prediction and moderation in ART. In short, it is methodologically possible to model recipient stable traits as both predictors and moderators at different time points, but it is conceptually and

empirically unclear precisely when and how recipient stable traits may change predictive and moderating functions over time throughout the causal processes delineated in ART.

Disambiguating the predictive and moderating roles of recipient stable traits is necessary to improve the precision of ART.

Historical controversies surrounding the development and refinement of dual process models point to further deficiencies in the current treatment of moderating and mediating factors in ART. Petty et al. (1993) detail the complexities of moderating and mediating variables in dual process logic. Specifically, the theorists claim, “universal predictions concerning independent, mediating, and dependent variables (e.g., such as ‘argument strength always influences issue relevant cognitions that in turn always influence attitudes’) are inappropriate because the effects of mediators must be understood in the context of moderators” (p. 346).

Dual process models, applied to ART, hint that it is an overgeneralization to claim that situational factors and recipient traits always moderate the link between message feature appraisals and outcomes. Indeed, scholars acknowledge that both the presence (i.e., prediction or mediation) and strength (i.e., moderation) of influence between advisor characteristics, message feature evaluations, and advice outcomes may all vary based on recipients’ stable traits (e.g., sex) and situational characteristics (e.g., problem seriousness, time since advice was received; see Bodie & MacGeorge, 2022; MacGeorge, Guntzviller, et al., 2016). Yet, empirical tests of ART have largely limited moderation to the relationships between message feature evaluations and advice outcomes (e.g., MacGeorge, Guntzviller, et al., 2016). Stated using A-B-C logic commonly applied in mediation, tests of moderation in ART have largely been limited to the B path (message feature evaluations to outcomes) rather than the A path (advisor/relationship

characteristics to message feature evaluations; cf. Feng & MacGeorge, 2010). It is necessary to bridge these conceptual and empirical gaps in moderation analyses to continue advancing ART.

Appraisal theorizing further illustrates how the roles of recipient traits may change throughout the course of advice appraisal processes. Lazarus (1991) suggests an individual's unique personality modifies how they appraise and respond to life events. Lazarus's claim implies dual meanings across the temporal trajectory of cognitive appraisal and coping processes. On one hand, who a person is determines *whether* and *to what extent* they appraise certain aspects of a situation (e.g., people high in trait shame might be more likely to interpret messages as blame or criticism and therefore report higher levels of positive face threat perceptions). On the other hand, who a person is can also change *how important* certain aspects of the situation are to them (e.g., people with high trait alpha pride might pay less attention to how feasible the advice sounds because they assume they can perform any necessary action, dampening the association between feasibility and advice outcomes).

Lazarus (2006) asserts that a person's traits might also factor into how they evaluate other aspects of the advice conversation, including but not limited to social roles. In ART, the two primary roles are of advisor and advice recipient. It stands to reason that a recipient's perceptions of the advisor and their characteristics might also be predicted by, or have their influence on advice message feature appraisals moderated by, the recipient's stable traits. For example, someone high in trait alpha pride might be less likely to perceive the advisor as an expert (e.g., the person with high alpha pride perceives everyone as inferior to themselves; Tracy & Robins, 2007a, 2007b), leading to lower ratings of advisor expertise. It is also plausible that a person with high trait alpha pride might not care whether the person giving advice is an expert when evaluating the quality of their advice, weakening any associations between advisor expertise and

advice message feature appraisals. Note how the former evaluation is more likely to occur prior to receiving advice, whereas the latter can only occur during or following the advice conversation (i.e., once the advisor begins to give advice).

Both dual process theorizing and appraisal theorizing implicate advice recipient traits at multiple points throughout the causal processes delineated in ART, including but not limited to moderating the influence of advisor characteristics on message feature appraisals and the influence of message feature appraisals on advice outcomes. The possibility of recipient stable traits predicting advisor characteristics and message feature appraisals and moderating the influence of advisor characteristics on message feature appraisals should be empirically tested and, if supported, integrated into ART.

**The Integrated Model of Medical Advising.** Results point to two important opportunities to advance the IMMA. First, social emotions should be integrated into the IMMA. Feng et al. (2011) developed the IMMA by synthesizing ART with extant theories of health message processing (e.g., Rosenstock, 1960; Witte, 1992). A critical component of Witte's (1992) extended parallel process model that was omitted from the IMMA is patients' emotional responses to health messages. Based on the results, patients' emotional responses to medical advice may mediate the link between patients' cognitive assessments of medical advice and satisfaction with health care consultations. Both the extended parallel process model and appraisal theories also propose that emotions may mediate the relationship between message-related cognitions and behavioral outcomes such as adherence intentions (Lazarus, 1991; Witte, 1992). Although this theoretical prediction was not supported, robust literatures linking emotions and actions suggest it may be worthwhile to integrate both emotion-related predictions in future tests of the IMMA (e.g., de Hooge et al., 2014; Gino & Schweitzer, 2008; Lazarus, 1991; Van

Swol et al., 2018; Witte, 1992). In other words, the revised flow of the IMMA would move from message features to mediating cognitive processes, to mediating emotional processes, to outcomes.

Second, this dissertation draws attention to the continued need for research linking advice message features and message feature appraisals. For example, absence of limitations was negatively associated with reactance, counter to Guntzviller et al.'s (2019) conjecture that the negative association they found between absence of limitations and outcomes in the context of exercise advice from parents might be explained by appeals to absence of limitations being perceived as patronizing and inducing reactance. Although this dissertation addresses the limitation of not measuring reactance, it does not include the language that providers used during the consultations. It is not possible to identify if appeals to absence of limitations vary between chronic pain patient–provider consultations and parent–child conversations about exercise without a clear record of what was said during the advice conversations. Message features may explain the difference, or other factors such as the relationship type may be more important.

The IMMA is a useful framework for bridging gaps in ART and the model proposed and tested in this dissertation. IMMA addresses the black box between actual messages and message feature appraisals in ART. However, Feng et al. (2011) only coded for actual message features and did not assess patients' message feature appraisals. Observational studies similar to Feng et al. (2011) could be used to identify more specific messages providers use in self-management advice conversations (e.g., common persuasive appeals) that predict positive and negative perceptions by chronic pain patients. Such research would extend both ART and IMMA by linking specific appeals to response efficacy, feasibility, and absence of limitations to patient perceptions of medical advice, further tailoring the theories to the context of chronic pain

management, and guiding more precise communication recommendations for health care providers.

**Psychological Reactance Theory.** This dissertation holds at least four important implications for PRT. First, findings indicate scholars might consider differentiating perceptions of negative face threats and freedom threats in response to health advice. Negative face threat and freedom threat perceptions had differential associations with emotions and advice outcomes. This suggests the distinction between impolite suggestions (i.e., negative face threats) and aggressive commands (i.e., freedom threats) may be meaningful to patients. Indeed, differences in perceptions between negative face threat versus freedom threat may reflect the difference between expecting providers to give clear recommendations versus detesting when providers impose sanctions for nonadherence (see Brehm & Brehm, 1981; D'Angelo & D'Angelo, 2018; Glare et al., 2020). This also aligns with previous research documenting how categorical distinctions between high and low intensity freedom threats correspond with more or less reactance, respectively (see Quick et al., 2013, 2015). Scholars have only recently begun to incorporate negative face threat perceptions alongside freedom threat perceptions as predictors of reactance (Guntzviller & Bigsby, 2020), and theoretical and practical distinctions between the two constructs are not well-explicated. Additional research is needed to test if negative face threat and freedom threat perceptions are consistently distinguishable constructs and may share differential associations with reactance.

Relatedly, verbal distinctions between facework, face threats, and freedom threats require more attention in persuasive health communication research. Dillard and Shen (2005) provide support for the distinction between milder and stronger freedom-threatening language predicting the magnitude of reactance but note they did not explicitly aim to test the association between

specific message features and reactance and therefore conflated multiple message features in their experimental manipulations. For example, Dillard and Shen's high threat message contained blunt directives (e.g., "Floss every single day.") whereas their low threat message contained hedging statements that might be considered negative facework (e.g., "You may want to try [flossing] today"). Furthermore, the high threat message also included positive face threats (e.g., "it [is] just stupid not to floss every single day of your life"). Such verbal distinctions are unclear given that patients' perceptions, but not providers' actual messages, were assessed in this dissertation. Conducting observational or experimental studies wherein distinctions between negative face-threatening and freedom threatening language can be made and linked to advice message feature appraisals and outcomes is crucial to clarifying how reactance operates in medical advice contexts and ART more generally. Such research can also improve scholarly understanding of what speech acts do (not) constitute communicative freedom threats in PRT (see also Quick et al., 2013, 2015).

Third, scholars should carefully consider how reactance is defined relative to message feature appraisals such as positive face threats and freedom threats. Positive face threat was a positive predictor of reactance, whereas the relationship between freedom threat and reactance was only statistically significant and positive at very high levels of reactance proneness. This raises two questions. First, although recent scholarship has argued that positive face threats empirically predict reactance (e.g., Dorrance-Hall et al., 2021; Guntzviller & Bigsby, 2020), PRT suggests threats to a specific freedom of thought, feeling, or behavior are a necessary precondition for reactance to occur (Brehm & Brehm, 1981; Quick & Considine, 2008; Quick et al., 2013; Quick & Stephenson, 2008). It is currently unclear whether anger and negative cognitions induced by positive face threats can be considered reactance. For example, if people

perceive insults as threats to their freedom to perform specific behaviors, such as by inducing unwanted shame or guilt, then positive face threats may indeed constitute freedom threats (see Brehm & Brehm, 1981; Quick et al., 2015). Shame and anger are often concurrently experienced, including anger about being shamed (see Tangney & Dearing, 2002), leading to the possibility that positive face threats are stronger predictors of reactance because they amplify reactance with shame. Moreover, previous studies support the contention that feelings of guilt are related to greater freedom threat perceptions and reactance (Quick et al., 2015). Continuing to measure and explicate relationships among positive face threats, freedom threats, reactance, and self-conscious emotions is crucial to advancing the theory.

Finally, the negative association between response efficacy appraisals and reactance to self-management advice has implications for what message features and associated perceptions might effectively reduce reactance to health recommendations and supportive messages more generally. Findings align with previous research by Tian et al. (2020) that documented a positive association between poor argument quality and reactance to support messages. Message content appraisals in ART are based on the persuasion concept of stock issues, meaning people giving advice generally need to persuade recipients that their advised solution is effective, feasible, and does not have substantial drawbacks for their advice to be perceived as high-quality and worth acting on. It may be the case that appraisals of response efficacy reflect perceptions that the advisor persuaded the recipient that the advice would effectively solve the recipient's problem by using high-quality arguments about its efficacy. From this perspective, findings indicate that response efficacy appeals may be one particularly important type of argument for countering potential reactance to health recommendations or other supportive messages because these

appeals might elicit cognitions about the efficacy of the recommended action (see Feng & Burleson, 2008).

### ***Practical Applications***

Based on the results, there are at least four ways provider can work toward improving communication with chronic pain patients about self-management strategies. First, findings have implications for what types of patient appraisals are important for providers to explore during clinical consultations. The strong, positive relationships between receptiveness and adherence intentions, and feasibility appraisals and adherence intentions suggest providers would be well-advised to spend time exploring patients' desire for advice (i.e., receptiveness) and confidence in their skills and access to resources (i.e., feasibility). Asking questions about the situation is a recommendation in prominent theories of advice-giving (e.g., the integrated model of advice-giving; Feng, 2009), including whether the patient feels confident in their ability to enact advice or requires additional resources to make advice implementation feasible. If patients do not want advice (i.e., low receptiveness), it is unlikely that they will intend to follow providers' recommendations (D'Angelo & D'Angelo, 2018; Feng & MacGeorge, 2006; Guntzviller, Wang, et al., 2020; MacGeorge et al., 2004).

Patients similarly might not be able to follow advice if they lack the skills and resources to make it feasible. Advice about nutrition might not be feasible if patients have difficulty accessing grocery stores that stock nutritious foods, struggle to stand long enough to cook a meal, or do not have the recipes and skills necessary to confidently cook for themselves (i.e., reasons the advice is not feasible). As further examples, patients might struggle to engage in recommended physical activity if they feel they do not have time in their busy schedules, do not have access to appropriate equipment, or feel uncomfortable or judged when exercising at the

gym. Náfrádi et al. (2018) previously identified providing emotional support, promoting health literacy and understanding of chronic pain, and empowering patients to cooperate in choosing treatments as ways health care providers can improve patients' self-management and coping with chronic pain. This dissertation reiterates the importance of these communication skills and reminds providers to ask patients which of these forms of support is most helpful in addressing their unique barriers to engaging in self-management behaviors. Moreover, findings reinforce the importance of offering words of encouragement in helping patients feel capable of self-managing their pain (e.g., feasibility appraisals) and consequently improving their adherence to self-management recommendations (Bair et al., 2009; Hoffman et al., 2002).

Second, results draw attention to the aspects of advice providers can emphasize to potentially overcome resistance to self-management recommendations. In this study, appraisals of response efficacy corresponded with decreased reports of reactance. It may be the case that clearly explaining how and why recommended self-strategies are effective at reducing chronic pain could decrease the likelihood that chronic pain patients will reject the advice. This finding aligns with prior research that indicates patients may resist or reject self-management advice if it does not include a clear explanation (Fordyce, 1976; McCracken, 1998). Moreover, extant literature indicates overcoming reactance to medical recommendations is an important challenge for providers to overcome (D'Angelo & D'Angelo, 2018). Findings add to this research by pinpointing how providers explanations of specific self-management strategies might meet less resistance (e.g., reactance) if they specifically explain why the recommended strategy should be effective or has been effective in the past (i.e., appeals to response efficacy). As an example, anecdotal evidence suggests chronic pain patients often reject advice to participate in yoga because they believe the yoga causes more pain than it resolves. Providers might be able to

overcome resistance (e.g., reactance) to self-management advice about yoga by explaining how yoga might cause acute pain during certain stretches but leads to long-term decreases in pain and increases in functionality (i.e., response efficacy; see Schmid et al., 2019).

Third, findings inform the relational and communication climate providers should strive for in their clinical practices. The strong associations between patient trust and all message content appraisals indicate providers should dedicate time to building trust and rapport with chronic pain patients. The positive relationships between patient trust and message content and prosocial style appraisals, and negative relationships between patient trust and antisocial style appraisals, echo extant literature that emphasizes the importance of the patient–provider relationship in improving chronic pain management outcomes (e.g., Matthias & Bair, 2010; Thompson & Pulido, 2022).

The positive relationships between trust and positive facework, positive facework and gratitude, gratitude and patient satisfaction similarly indicate efforts to establish a positive relational climate would serve providers well. Expressions of gratitude typically garner reciprocal gratitude (Lazarus, 2006; McCullough et al., 2001), pointing to important communication skills providers can incorporate throughout every consultation. Thanking patients for their honest disclosures, hard work attempting to implement self-management strategies, and willingness to try new approaches (i.e., positive facework) should reinforce these behaviors and foster collaborative rapport (e.g., elicit reciprocal gratitude that corresponds with increased patient satisfaction). Encouraging patients to be kind to themselves (i.e., positive facework) may also help them accept their chronic pain and consequently cope more effectively (Fordyce, 1976; Hoffman et al., 2002; McCracken, 1998). Considered alongside the aforementioned importance of encouraging messages for helping patients perceived self-management strategies are feasible

for them, findings linking positive facework, gratitude, and satisfaction offer further reasons providers should have training on how to deliver effective emotional support in addition to asking questions, analyzing the situation, and giving advice (Burlison & Goldsmith, 1996; Feng, 2009). Such person-centered communication strategies should both improve the effectiveness of individual advice conversations and the quality of patient–provider relationships over time. In turn, improved relationships may also benefit future advice conversations (see Bodie & MacGeorge, 2022).

Fourth, in addition to receiving communication skills training focused on identifying patients’ concerns and providing appropriate support, providers can enhance patient care by collaborating with other providers and capitalizing on the strengths of various specialists (K. S. Brown & Folen, 2005; Turk et al., 2010). For example, if providers identify patients who are particularly sensitive to being told what to do (i.e., high reactance proneness), they might discuss this with mental health professionals (e.g., psychologists, counselors) and call on their expertise to help patients recognize their cognitive resistance and reframe their thoughts such that they are more receptive to providers’ self-management advice. Cognitive behavioral therapy (CBT) has already demonstrated effectiveness in aiding chronic pain patients’ self-management (Nicholas & Blyth, 2016), so it should be feasible to incorporate exercises about how to cognitively interpret and respond to health care providers’ advice as part of a CBT protocol, potentially as a topic in existing assertive communication skills trainings (see Nicholas & Blyth, 2016; Thorn et al., 2018). Similarly, if providers have limited time to discuss why and how self-management recommendations improve pain (i.e., discussions about response efficacy) during a clinical consultation, providers might instead refer patients to other health care professionals such as nurses, social workers, or occupational therapists or recommend patients enroll in chronic pain

education programs. Both CBT and education programs have been shown to improve chronic pain patients' health outcomes (e.g., Thorn et al., 2018). This effect might be amplified by strategically aiming to improve patients' acceptance of and adherence to self-management recommendations from their health care providers.

### **Strengths and Limitations**

This study has many notable strengths. Conceptually, this dissertation project extends theorizing about advice message processing broadly and chronic pain patients' self-management advice processing specifically. This dissertation is the first study to explicate the roles of six social emotions in ART and IMMA. Previous studies only explicated the role of reactance (e.g., Guntzviller & Bigsby, 2020) or did not draw on theory to explicate the functions of emotions (e.g., Paik, 2020). By integrating appraisal theories of emotion (e.g., Lazarus, 1991; Tracy & Robins, 2007b), I was able to link reactance, gratitude, shame, guilt, alpha pride, and beta pride to message feature appraisals and advice outcomes above and beyond the ways previous advice research has incorporated emotions (cf. de Hooge et al., 2014; Gino & Schweitzer, 2008). Although the model is focused on chronic pain patients' self-management advice processing in particular, it lays the groundwork for integrating multiple social emotions into ART and related theories.

Many aspects of the design are also meritorious. I collected responses from chronic pain patients in the United States who reported on a diverse range of health care providers and self-management advice topics. I utilized measures that have demonstrated reliability and validity in extant studies, tailored measures to the context of chronic pain management, and included attention checks to increase the likelihood that participants would carefully respond to the questionnaire. Data were collected through a reputable research platform (i.e., Prolific) that

carefully verifies participants' identities and mediates interactions between participants and researchers to help maintain confidentiality. Data also exhibited very low levels of missingness and no evidence of response biases such as straight lining. These indicators of high data quality lend credence to the findings.

The present study also has limitations. First, participants predominantly identified as White individuals who were at least moderately satisfied with their health care. Given that racial and ethnic minorities report more discrimination and less trust in health care providers (Ghoshal et al., 2020; Pryma, 2017), this sample likely does not adequately reflect the population distribution of high and low trust in health care providers or positive and negative patient-provider interactions. On average, participants reported moderate-to-high trust in their health care providers (3.9 out of 5); low perceptions of positive face threats (1.5 out of 5), negative face threats (2.1 out of 5), and freedom threats (1.6 out of 5); low levels of anger (1.9 out of 5) and shame (1.5 out of 5); and moderate levels of gratitude (3.2 out of 5). Qualitative feedback triangulates that participants tended to trust their health care providers and have positive perceptions of care (e.g., "Thank you for this survey. It reminded me how much I appreciate my doctor"). This trend may indeed be explained by racial and ethnic differences, but there were inadequate numbers of participants in each non-White racial or ethnic group to facilitate statistical group comparisons. More representation across racial and ethnic groups, as well as more variation in patient satisfaction, is necessary to adequately reflect the population of chronic pain patients in the United States and refine the theoretical model. Findings should be interpreted with consideration of these limitations in generalizability.

This study is also limited in its sample size. The final sample of 208 participants (203 for analyses including control variables) was enough to run the structural models but precluded

running the full measurement model (i.e., the model failed to converge). The inability to run a full measurement model with all constructs of interest at once makes it difficult to assess the full nomological web of theoretically proposed relationships (e.g., convergent and discriminant validity). Running hundreds of statistical tests at once with a sample size that just exceeds the general recommendation of 200 cases for structural equation modeling may not yield the most robust model-implied variance-covariance matrix. Unexpected positive associations between positive and negative face threats, prosocial emotions, and advice outcomes raise concerns about this possibility. Statistically significant paths might change substantially if analyses were conducted on a larger sample size with more representation of positive and negative perceptions of advice. For example, more variation in antisocial advice style appraisals and emotions such as pride might reveal associations with advice outcomes that were not evident in this sample. Scholars should proceed with caution when interpreting unexpected findings detailed throughout this chapter.

A third noteworthy limitation is the cross-sectional design using retrospective recall. Using cross-sectional, retrospective recall designs is common in tests of ART (e.g., Feng & Feng, 2013; Feng & MacGeorge, 2010; MacGeorge et al., 2004), and this data is subject to the same potential biases. As pointed out by MacGeorge, Guntzviller, et al. (2016), retrospective recall introduces potential memory bias that may skew advice recipients' reports of message feature evaluations. Guntzviller et al. (2022) reported how advice recipients may forget the details of message features and rely on advisor characteristics such as relational satisfaction to "fill in" their message feature ratings as evidenced in qualitative feedback from participants approximately six weeks after having an advice conversation. Such biases might artificially inflate relationships between advisor characteristics and message feature evaluations and reduce

the magnitude of associations between advisor characteristics and outcomes (see MacGeorge, Guntzviller, et al., 2016 for further discussion). This might explain, in part, why patient trust did not share direct associations with advice outcomes.

The cross-sectional design also precludes causal claims based on the results. For example, it is possible that the reported advice interactions or subsequent consultations might have influenced patients' perceptions of trust prior to completing the questionnaire. It is unclear if patient trust may have been influenced by the advice conversation or subsequent interactions with the provider each patient reported on. Previous research has documented how past support conversations may influence perceptions of subsequent advice conversations (Guntzviller, MacGeorge, et al., 2017; see also Bodie & MacGeorge, 2022), and it is equally plausible that trust is an outcome rather than an antecedent of patient-provider advice interactions (Street et al., 2009). Although this study adequately tests ART's core propositions, failure to account for relational history and changes in patient trust over time is a notable limitation. Moreover, the direction of relationships in the tested model only reflects theoretical causality based on ART but is insufficient empirical evidence of causality.

## **Future Directions**

### ***Future Directions for Research Methods***

Several methodological approaches can be employed in future research to help improve knowledge of chronic pain self-management advice processing. Longitudinal tests are necessary to test causal predictions, investigate immediate post-conversation emotions, and track changes in message processing and emotions over time. In the first known test of ART that includes both immediate post-conversation advice message feature appraisals and outcomes and retrospective recall ratings of the advice conversation approximately 12 days later, Guntzviller et al. (2022)

reported that how recipients perceive and respond to advice messages is generally stable, but changes over time in specific circumstances. For example, qualitative reports suggested some people had initial emotional reactions that led them to perceive advice as lower in quality, and their perceptions improved after they had time to calm down and reflect on the advice.

Guntzviller et al. also found support for the core propositions of ART using a model that included pre-conversation evaluations of advisor and relational characteristics, post-conversation evaluations of advice message features, and time lagged ratings of advice outcomes. This dissertation relies on the causal logic of ART but needs to be tested using a similar longitudinal design to provide empirical evidence of causality. Post-conversation emotions could be added to Guntzviller et al.'s design at the second and third time points to see if initial emotional reactions predict future advice outcomes and identify if advice recipients report different emotions concerning the advice conversation as they reflect on and potentially reappraise the meaning of the conversation (Guntzviller et al., 2022; Lazarus, 1991; MacGeorge, Guntzviller, et al., 2016).

Observational and experimental studies are necessary to determine advice message effects on perceptions and outcomes. Observational studies are necessary to understand specific messages providers say during consultations that predict advice message feature appraisals. Although Feng et al. (2011) coded patient-provider advice interactions for specific appeals to response efficacy, feasibility, and absence of limitations, the researchers did not assess patients' perceptions of these message features. Future tests of the ART and IMMA-based model presented herein could bridge this gap by quantitatively coding advice content appeals, facework, and face threats, and then measuring patients' corresponding perceptions and subsequent advice outcomes (e.g., adherence). Moreover, observation will likely uncover variations in providers'

appeals to the response efficacy, feasibility, and absence of limitations for different self-management recommendations, providing potential message vignettes for experimental studies.

Experimental studies can shed light on how specific message feature variations and sequential combinations of message features predict people's evaluations of message features and advice quality (e.g., Feng, 2009; Feng & Burleson, 2008). Feng and Burleson's (2008) test linking explicit arguments about response efficacy, feasibility, and absence of limitations to corresponding message feature appraisals only included a handful of message features using a fixed-effects model (i.e., one message per category of message feature). More elaborate experimental designs with multiple self-management advice messages (e.g., common appeals used when discussing nutrition, exercise, or rest) analyzed using a random effects model would improve confidence in the relationships between various appeals and appraisals (see Jackson & Jacobs, 1983). Considering Guntzviller et al. (2019) previously noted that appeals to feasibility and absence of limitations might sometimes be perceived as patronizing, it is important to test if certain variations are (not) perceived as effective.

Measuring additional proneness characteristics may yield further insights into the predictive, mediating, or moderating roles of patients' personality traits in medical advice-taking. As an initial test, this dissertation only included reactance and gratitude proneness. However, trait variations exist for all other emotions included in this dissertation. Trait shame might be particularly important given that people who are prone to shame are also often prone to anger (Tangney & Dearing, 2002), potentially amplifying both shame and reactance. Trait guilt might function similarly. Previous studies have demonstrated that guilt may enhance perceptions of freedom threat and potentially reactance (Quick et al., 2015). It is possible that guilt proneness could also positively predict freedom threat perceptions or strengthen the association between

freedom threat and emotions such as guilt and reactance. Given that chronic pain patients report higher levels of trait shame and guilt compared to healthy controls (Turner-Cobb et al., 2015), it is important to include these traits in future investigations of chronic pain self-management advice. Relatedly, this survey did not include measures of alpha and beta pride proneness (Tracy & Robins, 2007a). Other research indicates personality traits related to alpha pride, such as narcissism, predict worse mood in response to physical pain (Brunell et al., 2021). It stands to reason that an overinflated ego could lead patients to report less satisfaction with consultations when they are in pain. Future studies should consider measuring additional personality traits such as alpha pride and narcissism and assess the extent to which they predict, mediate, or moderate the influences of patient trust and patients' appraisals of advice on outcomes.

Another related future direction involves developing more succinct and valid measures of certain self-conscious emotional traits and states. To this researcher's knowledge, the only available measures of trait shame and guilt are the TOSCA-3 (Tangney & Dearing, 2002) and the Guilt and Shame Proneness Scale (GASP; Cohen et al., 2011). Although the GASP is shorter than the TOSCA-3, both measures involve participants reading a long series of paragraphs describing different real-life situations and rating their typical response to each scenario. Such measures are impractical for chronic pain populations, who are particularly vulnerable to fatigue, as well as for clinical research in which little time can be dedicated to completing questionnaire items. Moreover, only the TOSCA-3 measures alpha and beta pride proneness, and the short form excludes these items (Tangney & Dearing, 2002). Thus, brief measures of shame, guilt, and pride proneness need to be developed and validated. Relatedly, alpha pride items yielded low mean scores with little variation. Although this might accurately describe participants, the negative connotations of the descriptive adjectives (e.g., "conceited," "stuck-up") raise concerns

about social desirability bias. The validity of the measure has only been established in samples of undergraduate psychology students (see Tracy & Robins, 2007a), who may be aware of social desirability bias and try to avoid it as survey participants (e.g., being more likely to agree with negative descriptions of their feelings). It might be worthwhile to develop a measure of alpha pride (and beta pride) that focuses more on the experience of alpha pride rather than social perceptions of alpha pride, as is the case for measures of shame and guilt (see Marschall et al., 1994).

A final methodological future direction worth noting here involves investigating the role of pre-conversation emotional states in advice message processing. Ample evidence exists to suggest that emotions can influence advice processing and decision-making regardless of whether messages in the advice conversation cause those emotions. The experimental studies conducted by Gino and Schweitzer (2008) and de Hooze et al. (2014) investigated the roles of *incidental emotions*, or emotions caused by an external situation and not the advice message, and found these emotions nevertheless predicted advice-taking. Relatedly, Nabi (1999) explicated how a person's emotional state prior to processing a persuasive appeal affects how they process the appeal. Although Nabi focused on inducing a target discrete emotion in the beginning of a message prior to the persuasive appeal, this logic should similarly apply to other emotions experienced prior to processing messages, including advice messages. Nabi (2003) supported this observation by demonstrating how anger and fear induced by a pre-message framing task influenced subsequent information processing. Given that chronic pain patients frequently experience a host of negative emotions in response to their pain, including but not limited to anxiety, anger, and shame, it is important to consider how the emotions likely felt by chronic

pain patients prior to self-management advice-containing consultations might influence their message processing going into the consultation.

### ***Future Directions for Communication Theory***

Numerous communication theories are valuable lenses through which to better understand patient–provider communication about chronic pain self-management. One important way communication theories can guide future research is by explicating how chronic pain patient–provider communication and relationship processes evolve over time (see Poole, 2013). One communication theory that is well suited to this endeavor is relational turbulence theory (Solomon et al., 2016). Hintz (2020) recently called on communication scholars to utilize relational turbulence theory to understand challenges associated with chronic pain communication in relationships. Although Hintz limited focus to personal relationships, patient–provider relationships also have the potential to become turbulent, as evidenced by literature documenting patients’ sensitivity to hostile and dismissive communication from providers (e.g., Pryma, 2017; Upshur et al., 2010). Such patient reports may be explained, in part, by negatively biased cognitive appraisals of providers’ communication (see Solomon et al., 2016). Indeed, many chronic pain patient–provider relationships appear to be caught in feedback loops of negative communication from one party begetting negative communication from the other party and so on (see Matthias & Bair, 2010; Matthias, Parpart, et al., 2010). Based on the results, such communication patterns are harmful to patients’ satisfaction with and adherence to self-management recommendations. Understanding these processes by applying relational turbulence theory may yield valuable insights into managing turbulence, promoting resilience, and improving health outcomes in chronic pain management.

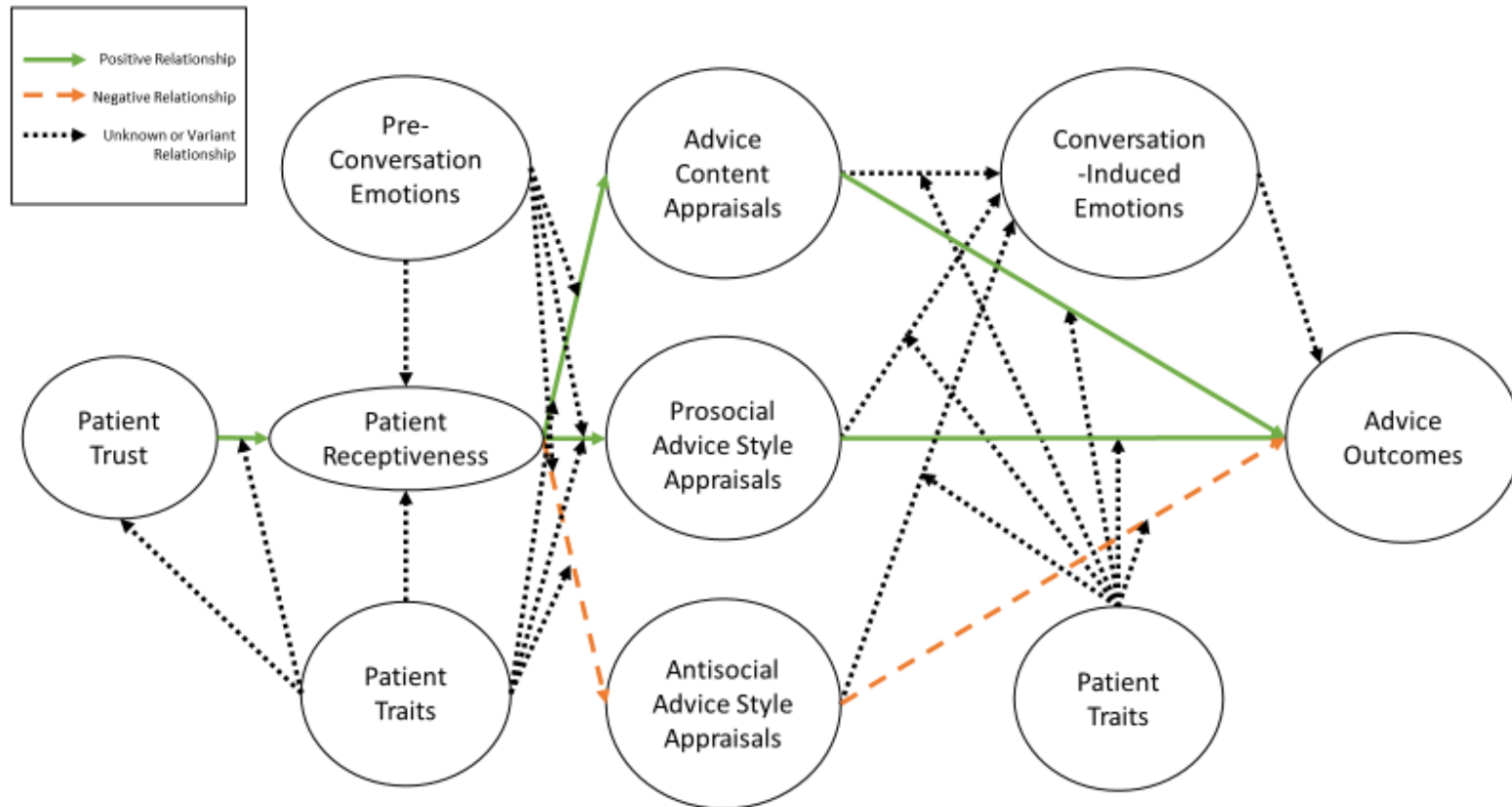
Another way communication theories and research can guide extensions to the proposed theoretical model is by incorporating health care providers' perspectives and explicating dyadic influence in advice interactions. For example, Guntzviller, Liao, et al. (2020) previously synthesized ART with construal level theory (Trope & Liberman, 2010) to explain how the psychological distance between advisors and recipients can enhance or constrain advice evaluations and outcomes. One notable finding was that advisors' ratings of their own expertise were related to recipients' ratings of positive facework. For primary care providers treating chronic pain, insufficient education in pain care is common (see IoM, 2011). It is possible that providers who do not feel adequately trained in chronic pain care may act less confident during consultations, negatively impacting chronic pain patients' perceptions and outcomes (Becker et al., 2017). Moreover, in the chronic pain context, providers are especially likely to encounter patients whom they perceive as abusive (see Matthias, Parpart, et al., 2010). Negative experiences with chronic pain patients can catalyze burnout and negatively affect patient care (see review by Thompson & Pulido, 2022). For example, it is plausible that providers' judgments about patients' personality traits (e.g., pain catastrophizing) might lead them to engage in more face-threatening communication during a consultation and negatively impact patients' perceptions of their self-management advice and advice outcomes. Explicating and testing a dyadic version of the proposed model is an important step toward fully understanding chronic pain patient-provider advice interactions.

There is also room to further integrate state and trait emotions into the proposed model. A more elaborate model that incorporates trait and state emotions at multiple time points throughout the trajectory of advice conversations and outcomes as predictors, mediators, and moderators can be derived by integrating additional components of dual process theories (e.g.,

Petty et al., 1993), appraisal theories (e.g., Lazarus, 1991), and Nabi's (1999, 2003) research on the influence of state emotions on message processing. A sample model is presented in Figure 15. As visually depicted in the model, trait emotions may predict perceptions of advisor and relational characteristics (e.g., patient trust) and receptiveness, predict pre-conversation emotions, moderate the influence of advisor and relationship characteristics on receptiveness and advice message feature appraisals, and moderate the influence of receptiveness on message feature appraisals. Pre-conversation emotional states may predict receptiveness, predict message feature appraisals, moderate the influence of trust on receptiveness, moderate the influence of trust on message feature appraisals, and moderate the influence of receptiveness on message feature appraisals. Trait emotions may also predict pre-conversation state emotions and moderate the influence of pre-conversation emotions on advice message feature appraisals. The direction of these relationships will vary based on the discrete emotion of interest. It is unclear to what extent such a complex model would be testable and useful for informing chronic pain management practices and advice-giving recommendations more broadly. A programmatic series of partial tests could be used to parsimoniously refine the model.

**Figure 15**

*Expanded Theoretical Model Reflecting Multiple Roles of State and Trait Emotions*



*Note.* Covariances and direct paths from (a) patient trust to advice outcomes, (b) patient receptiveness to advice outcomes, (c) patient traits to pre-conversation emotions, and (d) pre-conversation emotions to message feature appraisals are omitted for visual clarity.

Arrows touching other arrows indicate moderation.

## Conclusion

As evidenced throughout this chapter, the proposed theoretical model and results advance knowledge about advice message processing within and beyond the chronic pain context. Trust and receptiveness appear to have distinct functions in addition to mediated relationships. Receptiveness and feasibility stand out as potentially strong predictors of adherence to self-management recommendations. Emotions mediated at least some relationships between advice message feature appraisals and outcomes, including instances where there were no direct effects. Patient sex moderated the association between negative facework and patient satisfaction, reactance proneness moderated the relationship between freedom threat and reactance, and gratitude proneness moderated the relationships between negative face threat and gratitude, feasibility and adherence, and absence of limitations and adherence. Although not all theoretical propositions were supported, partial support for all extensions to ART in the proposed model suggest integrating face threats, social emotions, and personality traits into ART are viable future directions for advice research.

Numerous extensions to the proposed theoretical model are also possible. Three directions for future theory and research are: (a) investigating how self-management advice consultations unfold within the context of ongoing patient–provider relationships, (b) accounting for providers’ perceptions and mutual influence during self-management advice consultations, and (c) testing multiple predictive, mediating, and moderating roles of patient traits using longitudinal data. Achieving these goals will require application and synthesis of multiple theories within and beyond the field of communication, including but not limited to ART (MacGeorge, Guntzviller, et al., 2016), IMMA (Feng et al., 2011), PRT (Brehm & Brehm, 1981), appraisal theories (Lazarus, 1991; Tracy & Robins, 2007b), dual process theories (Bodie

& Burleson, 2008; Nabi, 1999; Petty & Cacioppo, 1986), and relational turbulence theory (Solomon et al., 2016). The model explicated, tested, and extended in this dissertation provides the groundwork for these future endeavors.

Perhaps most importantly, this dissertation offers practical recommendations for providers caring for people with chronic pain. Providers can potentially enhance patients' satisfaction with and adherence to self-management advice by practicing theory-based communication skills, including but not limited to: (a) asking questions about patients' thoughts, feelings, and goals; (b) providing emotional support to help patients reappraise negative emotions such as anger and shame; (c) explicitly explaining how and why a self-management strategy should effectively improve chronic pain intensity, unpleasantness, or interference with daily activities; (d) identifying the skills and resources patients need to feel confident executing the advised actions, and connecting patients to educational and physical resources; (e) addressing potential side effects of the advised strategy (e.g., pain following exercise) and how to overcome them (e.g., rest, ice, etc.); (f) complimenting patients when they do well and encouraging them to continue engaging in recommended self-management activities, thereby enhancing self-efficacy and creating a climate of gratitude; and (g) avoiding overly critical or dogmatic language that may induce reactance or shame. Moreover, providers can cooperate with other health care professionals to help chronic pain patients gain the knowledge and skills they need to effectively implement self-management recommendations (e.g., CBT, pain education programs). Practicing these patient-centered communication strategies shows promise for enhancing therapeutic alliances between providers and chronic pain patients (Thompson & Pulido, 2022). By following these guidelines, providers can continue advancing the goals outlined by the IoM (2011) and improving pain management in the United States.

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## Appendix A

### Quantitative Survey Items and Factor Loadings

Construct	Item	Initial loading	Final loading
Reactance proneness	1: I become frustrated when I am unable to make free and independent choices.	<b>0.54</b>	<b>0.46</b>
	2: It irritates me when someone points out things which are obvious to me.	<b>0.57</b>	<b>0.56</b>
	3: I become angry when my freedom of choice is restricted.	<b>0.52</b>	<b>0.45</b>
	4: Regulations trigger a sense of resistance in me.	0.70	0.71
	5: I find contradicting others stimulating.	<b>0.52</b>	<b>0.54</b>
	6: When something is prohibited, I usually think, "That's exactly what I'm going to do."	0.64	0.67
	7: I resist the attempts of others to influence me.	<b>0.55</b>	<b>0.55</b>
	8: It makes me angry when another person is held up as a role model for me to follow.	<b>0.52</b>	<b>0.52</b>
	9: When someone forces me to do something, I feel like doing the opposite.	0.70	0.70
	10: I consider advice from others to be an intrusion.	<b>0.58</b>	<b>0.58</b>
	11: Advice and recommendations usually induce me to do just the opposite.	0.68	0.71

Construct	Item	Initial loading	Final loading
Gratitude proneness	1: I have so much in life to be thankful for.	0.91	0.92
	2: If I had to list everything I feel grateful for, it would be a very long list.	0.90	0.90
	3: <i>When I look at the world, I don't see much to be grateful for.</i>	0.70	0.70
	4: I am grateful to a wide variety of people.	0.71	0.71
	5: As I get older, I find myself more able to appreciate the people, events, and situations that have been a part of my life history.	0.73	0.73
	6: <i>Long amounts of time can go by before I feel grateful for something or someone.</i>	<b>0.34</b>	—
Patient trust	1: I doubt that [provider] really cares about me as a person. *	0.61	0.61
	2: [provider] is usually considerate of my needs and puts them first.	0.87	0.87
	3: I trust [provider] so much that I always try to follow their advice.	0.79	0.81
	4: If [provider] tells me something is true, then it must be true.	0.68	0.70
	5: <i>I sometimes distrust [provider]'s opinion and would like a second one.</i>	0.75	0.76
	6: I trust [provider]'s judgment about my medical care.	0.79	0.79
	7: <i>I feel [provider] does not do everything they should for my medical care.</i>	0.74	0.74
	8: I trust [provider] to put my medical needs about all other considerations when treating my medical problems.	0.75	0.74

Construct	Item	Initial loading	Final loading
	9: [provider] is a real expert in taking care of medical problems like mine.	0.74	0.74
	10: I trust [provider] to tell me if a mistake was made about my treatment.	0.79	0.79
	11: <i>I sometimes worry that [provider] may not keep the information we discuss totally private.</i>	<b>0.41</b>	—
Patient receptiveness	1: I wanted advice from [provider] about how I could self-manage my pain.	0.92	0.93
	2: I wanted [provider] to help me figure out how I could manage my own pain.	0.91	0.85
	3: <i>I didn't want [provider] to advise me about how to self-manage my pain.</i>	0.70	0.72
	4: I hoped [provider] would help me come up with a plan for managing my own pain.	0.77	0.77
Response efficacy	1: I believed [provider]'s advised action could help me improve my chronic pain.	0.90	—
	2: I perceived [provider]'s advised action could help me manage my chronic pain.	0.90	—
	3: I believed [provider]'s advised action could improve my difficulties with chronic pain.	0.79	—

Construct	Item	Initial loading	Final loading
Feasibility	1: <i>[provider] advised me to do something I was NOT capable of doing to manage my chronic pain.</i>	0.74	—
	2: The advice [provider] gave me was something I could do to manage my chronic pain.	0.84	—
	3: I was capable of doing what [provider] recommended to manage my chronic pain.	0.79	—
Absence of limitations	1: <i>I predicted [provider]'s advised action would have serious drawbacks.</i>	0.81	—
	2: <i>I could see how [provider]'s advised action had significant disadvantages.</i>	0.83	—
	3: <i>I could tell [provider]'s advised action would have undesirable side effects.</i>	0.80	—
Positive facework	1: [provider] made me feel liked.	0.86	0.86
	2: [provider] made me feel approved of.	0.86	0.87
	3: [provider] made me feel understood.	0.79	0.78
	4: [provider] made me feel like they identified with me.	0.78	0.78
	5: [provider] implied I was a capable person.	0.72	0.71
	6: [provider] treated me as a competent person.	<b>0.02</b>	—
	7: [provider] did not suggest I lacked ability.	<b>0.31</b>	—
	8: [provider] made me feel good about myself.	0.89	0.88

Construct	Item	Initial loading	Final loading
Negative facework	1: [provider] made it clear that I could choose to take their advice or not.	<b>0.39</b>	—
	2: [provider] respected my right to make my own decisions.	0.73	0.72
	3: [provider] left me free to do what I wanted to do.	<b>0.58</b>	<b>0.56</b>
	4: [provider] showed consideration for my independence.	0.85	0.86
Positive face threat	1: [provider] made me feel disliked.	0.89	0.90
	2: [provider] made me feel disapproved of.	0.91	0.91
	3: [provider] made me feel misunderstood.	0.87	0.85
	4: [provider] made me feel misjudged.	0.84	0.83
	5: [provider] implied that I was NOT a capable person.	0.81	0.79
	6: [provider] treated me as an incompetent person.	0.85	0.83
	7: [provider] suggested I lacked ability.	0.70	0.69
	8: [provider] made me feel bad about myself.	0.89	0.90
Negative face threat	1: [provider] made it clear that I should take their advice	<b>0.08</b>	—
	2: [provider] did NOT respect my right to make my own decisions.	0.85	0.85
	3: [provider] did NOT leave me free to do what I wanted to do.	<b>0.50</b>	<b>0.50</b>
	4: [provider] impeded upon my independence.	0.66	0.66
Freedom threat	1: [provider] threatened my freedom to choose.	0.63	0.63
	2: [provider] tried to make a decision for me.	<b>0.55</b>	<b>0.55</b>
	3: [provider] tried to manipulate me.	0.79	0.79

Construct	Item	Initial loading	Final loading
	4: [provider] tried to pressure me.	0.74	0.74
Negative cognitions	1: My thoughts about [provider]'s advice were mostly unfavorable.	0.95	0.97
	2: My thoughts about [provider]'s advice were mostly negative.	0.99	0.97
	3: My thoughts about [provider]'s advice were mostly bad.	0.95	0.92
Anger	1: I felt angry.	0.91	0.91
	2: I felt annoyed.	0.84	0.82
	3: I felt aggravated.	0.88	0.89
	4: I felt irritated.	0.90	0.88
Gratitude	1: I felt grateful.	0.91	0.91
	2: I felt appreciative.	0.92	0.92
	3: I felt thankful.	0.95	0.95
Shame	1: I wanted to sink into the floor and disappear.	0.83	0.87
	2: I felt small.	0.86	0.88
	3: I felt like I was a bad person.	0.64	—
	4: I felt humiliated.	0.77	—
	5: I felt disgraced.	0.71	—
	6: I felt worthless.	0.83	0.81
	7: I felt powerless.	0.80	0.84
Guilt	1: I felt remorse.	0.69	0.74
	2: I felt regret.	0.77	0.90

Construct	Item	Initial loading	Final loading
Alpha pride	3: I felt tension about something I had done.	0.70	0.68
	4: I couldn't stop thinking about something bad I had done.	0.78	0.63
	5: I felt like apologizing.	<b>0.52</b>	—
	6: I felt like confessing.	<b>0.38</b>	—
	7: I felt bad about something I had done.	0.76	—
	1: I felt arrogant.	0.70	—
	2: I felt conceited.	<b>0.58</b>	<b>0.56</b>
Beta pride	3: I felt smug.	<b>0.59</b>	0.68
	4: I felt snobbish.	<b>0.56</b>	—
	5: I felt stuck-up.	0.80	0.71
	1: I felt accomplished.	0.85	0.85
	2: I felt confident.	0.79	0.79
Patient satisfaction	3: I felt fulfilled.	0.85	0.85
	4: I felt productive.	0.79	0.79
	5: I felt successful.	0.87	0.87
	1: <i>Nothing was accomplished during the consultation.</i>	0.81	—
	2: I would like to have another consultation like this one.	0.76	—
	3: <i>I was very dissatisfied with the consultation.</i>	0.92	—
	4: I was very satisfied with the consultation.	0.94	—
	5: <i>I did NOT enjoy the consultation.</i>	0.85	—

Construct	Item	Initial loading	Final loading
	6: The consultation flowed smoothly.	0.73	—
Adherence intentions	1: I plan to [continue following/follow] the advice [provider] gave me.	0.96	—
	2: I intend to [continue using/use] the self-management strategies [provider] gave me.	0.95	—
	3: I intend to [continue doing/do] what [provider] recommended to manage my pain.	0.98	—

*Note.*  $N = 208$ . Reported coefficients are standardized. Factor loadings  $< 0.60$  are indicated in bold. Reverse scored items are indicated in italics.

## Appendix B

### Items Dropped Based on Confirmatory Factor Analysis

Construct	Item	Rationale
Patient trust	Item 11: I sometimes worry that [provider] may not keep the information we discuss totally private.	Item 11 ignores how providers are required to maintain confidentiality (e.g., HIPAA)
Gratitude proneness	Item 6: Long amounts of time can go by before I feel grateful for something or someone.	Item 6 was the only item focused on frequency
Positive facework	Item 6: [provider] treated me as a competent person.  Item 7: [provider] did not suggest I lacked ability.	Item 6 was erroneously measured using different scale anchors due to a programming error  Item 7 contains potentially confusing double-negative wording
Negative face threat	Item 1: [provider] made it clear that I should take their advice.	Item 1 does not reflect how patients often prefer clear instructions (D'Angelo & D'Angelo, 2018)
Alpha pride	Item 13: arrogant.  Item 16: snobbish.	Items 13 and 16 may have posed comprehension difficulties
Shame	Item 6: I felt like I was a bad person.  Item 8: I felt humiliated.  Item 9: I felt disgraced.	Item 6 was the only negative self-evaluation  Items 8 and 9 appear to assess humiliation rather than shame (Gilbert, 2019)
Guilt	Item 10: I felt like apologizing.  Item 11: I felt like confessing.  Item 14: I felt bad about something I had done.	Items 10 and 11 focus on action tendency rather than guilt experience  Item 14 was redundant with two other items