Abstract
This chapter introduces the reader to the important concept of the biopsychosocial model of illness and its role in healthcare. The chapter explains the theoretical basis of the biopsychosocial model and its relevance to an integrated understanding of pain. Practical application in assessing patients for psychosocial comorbidity and providing appropriate interventions through the use of psychosocial interventions including basic clinical practices informed by cognitive behavioral therapies are described.

Keywords
Orofacial pain • Temporomandibular disorders • Biopsychosocial model • Diagnosis • Treatment

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Introduction
The biopsychosocial model integrates psychological and social factors with traditional medical factors in order to better understand, and ultimately manage, the process of disease and illness across time and circumstance. Psychological factors include, for example, anxiety, depression,
symptom reporting, catastrophizing, and fear avoidance, while social factors include, for example, support from family and friends, stigma, and access to medical care. Each of the listed examples has extensive empirical support for their association with pain disorders. Consequently, this model is currently the dominant paradigm within pain medicine broadly, as evidenced by the scope and values of the international congresses hosted, for example, by the International Association for the Study of Pain, yet its incorporation within specific clinical or research settings remains highly variable. Similarly, its recognition and incorporation into temporomandibular disorder (TMD) and orofacial pain (OFP) clinical or research settings remains variable. A brief historical overview may help put this imperfectly realized but scientifically sound paradigm into context.

In many cultures, including ancient Greek culture within the Western world, integrated views of health have dominated. However, with the advent of anatomical and physiological investigations into the body, a biomedical view of healthcare prevailed in the Western world over the past several centuries: healthcare professions were fixated on attending to the biological or the physical manifestations of diseases or disorders. Over time with advances in biological, psychological, and sociological sciences, it has become more and more apparent that the three disciplines are inextricably intertwined and any one of these can influence any of the other two. This is also true of dysfunction or disorder in any of these three domains affecting the other two domains, and hence the biopsychosocial model of healthcare and illness (described in the next section) became established (Engel 1977). Although there was a large push initially by medicine to explicitly incorporate the biopsychosocial model, progress was very slow. Over the past 40 years, however, with considerable research across multiple disease domains, there is now much greater understanding of the “bigger bang” you can get for your therapeutic “buck” if the clinician does not just treat the biological in isolation to the psychosocial. In recent years an array of therapies has emerged fulfilling the biopsychosocial model’s perspective on treatment (Astin et al. 2003). Yet, when the short-term costs associated with healthcare economics are considered, medicine continues to struggle with the importance of full implementation of the model at the most basic level, that of evaluation and patient documentation (Zulman et al. 2016).

The orofacial pain field, including TMD, has developed in a manner similar to the larger medical field with respect to the biopsychosocial model of healthcare and illness. For the particular case of the development of the biopsychosocial model in TMD, further details are available (Ohrbach and Dworkin 2016). In brief, the earliest publications of TMD (Annandale 1887; Costen 1934) focused on structural perspectives, and the subsequent dominant view in the field was to focus on the correction of structure in order to address all types of patient complaints affecting the masticatory system and associated sensory mechanisms. The publication of an integrated assessment and classification system, the Research Diagnostic Criteria for TMD (RDC/TMD) (Dworkin and LeResche 1992) based on the recently published biopsychosocial model, was followed initially by widespread skepticism if not rejection by the dental field that psychosocial factors had any relevance at all to the concerns of dentistry, including pain disorders. Over time, however, evidence using the RDC/TMD protocol consistently demonstrated its relevance (Dworkin 2010; Kotiranta et al. 2015), and today the majority of those researching and managing orofacial pain and TMD understand that comprehensive and appropriate assessment and management requires consideration of the biopsychosocial model (Durham and Ohrbach 2010; Greene 2010; Schiffman et al. 2014). The evidence from the larger field of generic pain research also supports the significance of the biopsychosocial model as critical for understanding the complexity of pain processing (Campbell and Edwards 2009). Indeed, the orofacial pain and TMD field is replete with healthy, critical discussion, reviews, and conference proceedings building on the core tenets of the biopsychosocial model (Ceusters et al. 2015;
Greene et al. 1998; Greene and Obrez 2015; Michelotti et al. 2016; Ohrbach and Greene 2013). Nevertheless, the biopsychosocial model still awaits full incorporation into the field of oral medicine. In this chapter, we expand the consideration of the biopsychosocial model beyond TMD to include all of orofacial pain. This chapter will guide the reader through the following: the theoretical underpinning of the biopsychosocial model, psychosocial assessment of patients, and psychosocial interventions.

The Biopsychosocial Model

Whenever someone suffers from a disease or disorder, their psychological state will interact with their symptoms. Eventually the individual will decide to seek help and present signs and symptoms to a healthcare professional. The healthcare professional will then pursue a cognitive process of deduction, induction, and pattern recognition in order to attempt to match those signs and symptoms to a known disease or disorder and, in addition, may potentially institute further investigations in order to help identify the underlying disease or disorder by its pathophysiology. The preceding paragraph oversimplifies the description of the presenting features of a disease or disorder by assuming that only biological processes can influence signs and symptoms and assumes a “biological truism.” Assessment of only the disease-relevant signs and symptoms and identifying the potential underlying biological pathophysiology complete the conventional biomedical assessment of the patient. That any disease or disorder can exert other psychosocial effects on the individual is ignored and that any other psychosocial comorbidity can influence the presenting signs and symptoms and the way the individual reacts to them is also ignored. Another way of stating the same thing is that all individuals presenting to healthcare professionals for help with a disease or a disorder are necessarily experiencing “illness” which is a broader concept than just the clinical signs and symptoms of the disease or disorder. As Eisenberg defines it, illness is the “discontinuity of states of being and perceived role performances” (Eisenberg 1977), and this is important to consider as this chapter explores the biopsychosocial aspects and model of care in persistent orofacial pain.

The biopsychosocial model of care was first introduced to the medical literature in the late 1970s (Engel 1977, 1980, 1985) in order to acknowledge that there is more to a disease or a disorder than just its biomedical aspects. The biopsychosocial model acknowledges that any disease or disorder is a biopsychosocial entity; that is, it has biological effects or consequences, psychological effects or consequences, and sociological effects or consequences, and these three parts of the model are not mutually exclusive but rather can be reciprocal in their relationships.

To give a worked example from the field of interest, a person may have a disk displacement with reduction affecting their temporomandibular joint (TMJ) which (1) exerts a biological effect of occasional nociception and a loud clicking noise and (2) may cause the person to worry that there is something seriously “wrong” with their TMJ; the latter is amplified if commented on by other social contacts and in particular can make the individual more self-conscious about eating in public because of the noise. Worry, in turn, is often comprised of catastrophizing and anxiety; both are discussed later in this chapter. In this manner the biological affects the psychological and the sociological parts of the model, and there is also some reciprocation from the two latter parts of the model as they both have the potential to feed into central mechanisms of pain. Hence, the pain may be less than, proportional to, or greater than, the corresponding nociception from the TMJ.

From the somewhat simple worked example above, it is hopefully apparent how inextricably linked the parts of the biopsychosocial model are and how one part can influence another part to a greater, or lesser, extent dependent on the disease or illness in question as well as on the circumstances or environment surrounding the individual. In persistent (chronic) pain, the reciprocal links between the parts of the biopsychosocial model are of great therapeutic importance and
help both predict prognosis and determine the biopsychosocial therapeutic approaches necessary (Apkarian et al. 2005; Campbell and Edwards 2009; Epker et al. 1999; Ohrbach and Dworkin 1998; Turner et al. 2007). If therapy is not initiated to address all three aspects of the biopsychosocial triumvirate, then treatment will be less effective (Gatchel and Okifuji 2006).

The majority of the body of research into the biopsychosocial aspects of persistent OFP has occurred in TMD. The advancement of knowledge in TMD is largely due to the recognition of its biopsychosocial nature through the seminal work in the 1950s by Schwartz (Schwartz 1955), in subsequent years by Bell, Laskin, and Greene (Bell 1979; Greene and Laskin 1974; Laskin 1979), and culminating in the 1992 by Dworkin and LeResche who created the first, operationalized, dual axis biopsychosocial diagnostic criteria (Research Diagnostic Criteria for TMD; RDC/TMD) (Dworkin and LeResche 1992).

The construction and publication of the RDC/TMD in 1992 and its successor the Diagnostic Criteria for TMD (DC/TMD) (Schiffman et al. 2014) in 2014 allowed the selection, for the first time, of truly homogenous samples to be examined in research related to TMD and, an exploration, and consequently an understanding, of the influence of the biopsychosocial model on outcome of interventions for TMD. The two axes of both instruments help biologically define the condition of interest (Axis I, physical axis) and psychosocially assess the individual (Axis II, psychosocial axis). The remainder of this chapter will, therefore, use the knowledge on the biopsychosocial model’s influence on outcomes in TMD gained from the application of the (R)DC/TMD in TMD and the principles of the (R)DC/TMD to exemplify the role of biopsychosocial factors in persistent OFP. TMD can be used as the model by which to explain the influence and management of biopsychosocial factors as it is likely that most constructs relevant in TMD also exert influence in the biopsychosocial assessment and treatment of patients with persistent OFP (Durham et al. 2015). Currently, the other persistent OFP conditions, other than TMD, such as persistent dentofacial pain disorder (PDAP) (Nixdorf et al. 2012), burning mouth syndrome (BMS), and trigeminal neuralgia (TN), have a scarcity of data on the implications of the biopsychosocial model in their assessment and management, but given the data that are available (Durham et al. 2015), it is reasonable to assume that there will be sufficient similarities with TMD.

### Rationale for Applying the Biopsychosocial to OFP

At a most basic level, it is known that any chronic illness exerts psychological effects, and comorbid mental health problems are commonplace affecting up to a third of those with long-term physical health problems (Cimpean and Drake 2011). Depression and anxiety are particularly prevalent in those with any chronic physical health problem, and persistent OFP is no exception to this. There is an argument over which came first, a mental health problem or (persistent) pain, but the argument is somewhat moot as without managing the impacts of the pain and also the mental health problem neither is likely to significantly improve on its own or if managed in isolation. When one considers the significant biopsychosocial impacts of persistent OFP conditions, which are well described both in quality-of-life and qualitative research, it is hardly a leap of faith to accept that if one has unremitting pain radiating around one’s face, which clinicians fail to adequately explain or manage, then one’s mood and mental health may begin to suffer. Indeed, qualitative research suggests that the disruption in day-to-day living, “biographical disruption” in sociological terms (Bury 1982), caused by TMD, can be of such a magnitude that individuals begin to lose their sense of self, which compounds the impacts already being experienced (Durham et al. 2010, 2011). Further to this, if healthcare professionals do not adequately acknowledge the complaint as
a real phenomenon and give it “medical” legitimacy, or implicitly suggest some type of psychosomatic process, then the data suggest that individuals begin to exist in a liminal state neither truly “ill” in the eyes of society nor truly “healthy.” This can then detract from the social support that they need in order to function in their day-to-day lives (Durham et al. 2010).

The message for clinicians is that persistent OFP is often not a simple and unidimensional problem. All three aspects of the biopsychosocial model need to be assessed and acknowledged as pertinent to the persistent OFP complaint without placing a prejudicial emphasis (or de-emphasis) on any psychosocial comorbidity. The interplay between the biological and psychosocial domains needs to be assessed and acknowledged with the patient early in the process so that the patient understands the need to address all three elements within any treatment plan. If broaching the psychosocial aspects of the persistent OFP with the presenting patient is delayed until late in the therapeutic plan and biological managements are exhausted prior to engaging with psychosocial interventions, then the conversation about the psychosocial aspects of the persistent OFP runs the risk of becoming, from the patient’s perspective, “Well everything else has failed and now you are saying this is all in my head or I’m imagining it.” If this becomes the status quo through late discussion of the biopsychosocial model with the patient, then it is likely that interventions of the biopsychosocial type that could have been effective had they been implemented in a manner consistent with the biopsychosocial model will be less effective when presented at first presentation. This psychosocial assessment is **not**, so the oral medicine specialist can play the role of psychologist but rather so any interplay between the aspects of the biopsychosocial model is identified and discussed with the patient early, and a multidimensional treatment plan formulated in consultation with the patient so they understand the aims of its various dimensions and why these dimensions are being tackled simultaneously.

### Assessing the Psychosocial

Assessing the psychosocial status of patients can feel like unfamiliar and difficult territory for some oral medicine specialists. However, in dentistry, we have spent innumerable years as a profession assessing the level of (dental) anxiety of our presenting patients for dental procedures and dealing with this anxiety through a variety of behavioral and pharmacological techniques. The assessment of wider psychosocial factors or comorbidities can be thought of as simply an extension of this approach. Psychosocial assessment should not be fraught with trepidation for the clinician as it can be used to tactfully broach and demonstrate to patients that there are also other influencing factors to the complaint. When discussing the results of the psychosocial assessment, it is important to be very careful to choose words sensitively and carefully to ensure that the patient does not interpret what is stated by the clinician as asserting causation.

Given the time pressures inherent in most clinical practices, the recent proliferation of basic, short to ultra-brief, screening instruments for psychosocial comorbidity over the last 10–20 years has been very helpful. This profligacy of reliable, valid, and sufficiently short screening instruments has been used to help dramatically refine, and make much more clinically applicable, the biopsychosocial axis (Axis II) of the redeveloped RDC/TMD, the DC/TMD. The remainder of this section will focus on explaining the utility of the DC/TMD’s Axis II and demonstrating its clinical applicability.
**DC/TMD Psychosocial Axis (Axis II) Assessment**

There are two versions of the DC/TMD Axis II: a screening and a comprehensive version (see Table 1). The screening version is intended for clinical settings where the clinician can perform a biopsychosocial assessment using the fewest number of questions and any positive responses will result in referral for more detailed evaluation; this type of usage is the main focus of the further discussion of Axis II in this chapter. The comprehensive version is intended for settings where the clinician will actively integrate the information; it is of course also intended for clinical researchers so that they can more reliably measure the constructs of interest—e.g., to select, or stratify, their samples related to their (bio)psychosocial profile. The instruments in both versions are designed to be completed by the patient prior to the consultation and aim at identifying the most common psychosocial comorbidities associated with TMD. Both versions of the Axis II are freely available with interpretation guides for the scoring at the following website: www.rdc-tmdinternational.org.

As demonstrated in Table 1, there are three common elements to both versions of Axis II: pain drawing, Graded Chronic Pain Scale, and Oral Behaviors Checklist. This is because of their prognostic and therapeutic importance.

The pain drawing (also known in the wider literature as a “body manikin” Fig. 1) is an expeditious and time-efficient method for identification of the patient’s pain location(s) and referral or radiation patterns. Because multiple pain locations are more common than not in individuals with TMD pain, the body manikin is a very helpful method to identify widespread pain; this helps identify one major risk determinant for pain chronicity (Ohrbach et al. 2011), with an odds ratio of between 3 and 5 for chronicity of TMD when widespread pain is reported on the body manikin. This thereby helps delineate more complex cases from simpler ones by visual inspection of the completed pain diagram. In addition, patients tend to like to be able to precisely describe (through graphical means) their pains.

The Graded Chronic Pain Scale (GCPS, v 2.0) is a widely used and validated instrument examining pain persistence, pain intensity, and pain-related disability. It has four outputs, two of which are most commonly used: characteristic pain intensity, a composite 0–10 numerical rating scale of average, worst and current pain intensity which can be used for initial assessment (e.g., how does the reported pain intensity compare to other parts of the pain history), as well as a primary measure of outcome relevant to most individual’s reasons for seeking care. The second commonly used output is overall graded chronic pain status, which is a five-point, potentially expandable to six-point, ordinal scale ranging from 0 (no pain or

<table>
<thead>
<tr>
<th>Screening Assessment</th>
<th>Comprehensive Assessment</th>
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<td><strong>Instrument</strong></td>
<td><strong># items</strong></td>
</tr>
<tr>
<td>Pain drawing</td>
<td>1</td>
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<tr>
<td>Graded Chronic Pain Scale v2.0</td>
<td>8</td>
</tr>
<tr>
<td>Oral Behaviors Checklist</td>
<td>21</td>
</tr>
<tr>
<td>PHQ-4 (distress)</td>
<td>4</td>
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<tr>
<td>GAD-7 (anxiety)</td>
<td>7</td>
</tr>
<tr>
<td>[no corresponding instrument]</td>
<td></td>
</tr>
<tr>
<td>Jaw Functional Limitation Scale (short form)</td>
<td>8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>42</td>
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Graded chronic pain status (0, I, II, III, IV; grade II can be usefully subdivided into IIa and IIb) has been shown to usefully predict healthcare utilization, thereby helping provide a mechanism to stratify patients for levels of care (Durham et al. 2016) through the level of care required. Graded chronic pain status is also an indicator of prognosis in that higher graded chronic pain status predicts greater chance of chronicity of pain (Dworkin et al. 2002; Epker et al. 1999; Kotiranta et al. 2015; Manfredini et al. 2013; Von Korff and Dunn 2008). For example, a graded chronic pain state of III or IV was significantly more likely to result in a chronic TMD (Garofalo et al. 1998). The importance of higher graded chronic pain status was mirrored in the observation that grades IIb, III, and IV exhibited ten times greater odds of being associated with chronic TMD (Ohrbach et al. 2011). The remaining two outputs reflect pain persistence (the number of days of pain in the prior 6 months) and a direct measure of interference in daily activities (range, 0–100) caused by pain. The latter measure is a core component of the graded chronic pain.

The Oral Behaviors Checklist contains a list of 21 oral region activities individuals may engage in, such as clenching the teeth, bracing the mandible, or talking (see Fig. 2). The intent is to identify high levels of masticatory system parafunctional behaviors. The original RDC/TMD asked only two questions about these behaviors, ignoring a large range of possible other behaviors that people can engage in. The frequency of each behavior is rated on a five-point ordinal scale. For assessing behaviors that are largely unconscious,
How often do you do each of the following activities, based on the last month? If the frequency of the activity varies, choose the higher option.

**Activities during sleep**
1. Clench or grind teeth
2. Sleep in a position that causes jaw pressure

**Response options:** none of the time → 4-7 nights/week

**Activities during waking hours**
3. Grind teeth together
4. Clench teeth together
5. Press, touch or hold teeth together
6. Hold, tighten or tense muscles
7. Hold or jut jaw forward or to the side
8. Press tongue forcibly against teeth
9. Place tongue between teeth

**Activities during waking hours (continued)**
10. Bite, chew, or play with tongue cheeks or lips
11. Hold jaw in rigid or tense position
12. Hold between the teeth or bite objects
13. Use chewing gum
14. Play musical instruments involving use of mouth or jaw
15. Lean with your hand on the jaw
16. Chew food on one side only
17. Eating between meals
18. Sustained talking
19. Singing
20. Yawning
21. Hold telephone between head and shoulders

**Response options:** none → all of the time

Fig. 2 Basic item content of the Oral Behaviors Checklist is shown, illustrating this method of assessing parafunctional or overuse behaviors of the facial and masticatory region; actual item content is typically more comprehensive. Response options displayed are the extreme anchors of the five-point ordinal response scales.

A limitation of both interview and the two-question approach within the RDC/TMD is that self-knowledge of such behaviors often remains unconscious. In contrast, a 21-item instrument that lists each type of behavior separately and inquires into how often the behavior occurs leads to the respondent more carefully considering each behavior; respondents will often report that in completing this survey of possible behaviors, each individual behavior was “tested” in order to determine if it was familiar, thereby bringing the awareness to the conscious state. Test-retest reliability of this instrument in assessing largely unconscious behaviors is surprisingly good, and its semantic validity as well as correspondence with behaviors reported in real-time in the field is also good (Kaplan and Ohrbach 2016; Markiewicz et al. 2006; Ohrbach et al. 2008c). Scoring is, at present, based on a simple sum of the endorsed frequencies of each item. Current evidence indicates that a sufficient number and frequency of these behaviors lead to TMD (Ohrbach et al. 2013) and that even higher levels are associated with chronic TMD (Ohrbach et al. 2011). Other experimental and observational studies lead to the same conclusions (Carlsson et al. 2003; Glaros et al. 2016; Glaros and Burton 2004; Glaros and Williams 2012). In contrast, very little is known about whether these behaviors have any role in the OFP conditions, and therefore if clinicians use the instrument in other OFP conditions, they should bear this in mind and only use it to explore the possible issues with the patient, to test out a hypothesis.

Those instruments specific to the screening version of DC/TMD’s Axis II are the Patient Health Questionnaire-4 (PHQ-4) and the Jaw Functional Limitation Scale – short form (JFLS-SF). The PHQ-4 is a product of the PRIMary care Evaluation of Mental Disorders (PRIME-MD) project (Spitzer et al. 1999) which occurred during the 1990s in the USA. The PRIME-MD project was based on the DSM-IV and aimed to produce diagnostic instruments for five of the most common mental health problems presenting to primary care: anxiety, depression, somatoform, alcohol, and eating disorders (Kroenke et al. 2010). The results from PRIME-MD were then refined further to produce shorter and quicker instruments such as Patient Health Questionnaire-9 (PHQ-9) for depression, Generalized Anxiety Disorder-7 (GAD-7) for anxiety, and Patient Health Questionnaire-15 (PHQ-15) for somatic symptom severity. The PHQ-9 and GAD-7 were then examined in order to identify questions from both that could be made into a composite anxiety and depression screening instrument. Two questions from each instrument...
were used to create the ultra-brief PHQ-4 anxiety and depression screening instrument which is now widely in use across North America and Europe. PHQ-4 consists of four questions each using a four-point ordinal response scale of frequency (0, not at all; 3, nearly every day) with the response codes summed to give a summary score. A summary score of ≥6 is a yellow flag and ≥9 is a red flag and both demand further investigation; subscale scores within the instrument are also possible (Kroenke et al. 2007; Löwe et al. 2005; Löwe et al. 2010) albeit with reduced reliability compared to the full score. In addition, anxiety and depression collectively represent “distress,” a construct that patients are generally very comfortable with, further supporting the use of the full instrument in order to simplify interpretation for the patient.

The RDC/TMD included a checklist (yes, no) of jaw functions that can be limited, for instance, by pain, and it was intended as a placeholder for a better instrument in recognition of the critical importance of not only assessing jaw function through clinical measures but also through the person’s experience, known as functional limitation (Ohrbach 2010). The Jaw Functional Limitation Scale (JFLS) directly emerged from the RDC/TMD limitation checklist and uses graded responses, which have superior psychometric properties to the binary response and which patients prefer, and the 20-item version measures three domains: limitation in chewing, jaw opening, and verbal and emotional expression (Ohrbach et al. 2008a, b). The first two are strongly validated subscales with initial cross-cultural validity, while the third subscale should be used in an exploratory manner in the clinic and in research. The short form consists of eight items representative of the three subscales and measures a global level of functional limitation that correlates almost perfectly with the global scale of the full instrument. The short form is equally reliable, valid, and sensitive to change, and unless the clinician wishes to know about mobility and mastication separately, the short form is likely to be sufficient. All three subscales are elevated in individuals with TMD as well as other conditions, such as burning mouth syndrome and Sjogren’s syndrome (Ohrbach et al. 2008b) which suggests that the functional limitation construct is probably relevant to all OFP conditions.

The DC/TMD Axis II in either its screening or its comprehensive version is not a replacement for the involvement of a clinical psychologist to thoroughly assess the patient if required as both versions simply examine for the more common psychosocial comorbidities and thereby help identify the need for further involvement of specialized teams. This is particularly true, as psychosocial interventions for complex cases often need to be individualized, tailor-made, interventions for the presenting patient rather than a “one size fits all” approach. Further constructs other than disability, anxiety, depression, and somatoform disorders likely need to be examined by clinical psychologists, and the next section outlines both the role of the more common psychosocial constructs plus emerging other constructs of importance in persistent OFP such as catastrophization, self-efficacy, and fear avoidance.

**Psychosocial Constructs Relevant to Persistent OFP**

**Depression**

Depression is a mood state characterized primarily by low mood and loss of interest in usual activities and, when more severe, accompanied by vegetative symptoms such as decreased concentration, appetite changes, and feelings of worthlessness. When referring to the mood state, “depressive symptoms” is the better term, and this is what the self-report instruments such as the PHQ-4 and PHQ-9 assess. When vegetative symptoms become dominant, a diagnosable disorder may be present, referred to as “major depression disorder,” for example, and this disorder includes significant morbidity in terms of function and disability. Depression, as a disorder, is determined on the basis of careful interview according to established criteria, and such clinical assessment would logically follow a referral based
on a patient reporting high levels of depressive symptoms (PHQ-9) or distress (PHQ-4). In addition to referral for formal evaluation of a debilitating disorder, screening for depressive symptoms is standard in any pain treatment setting due to the comorbidity of depressive states with pain disorders. Depressive states impact on pain in a variety of ways: decreased pain modulation, decreased self-efficacy, inactivity, symptom amplification, and sometimes doctor shopping to find an answer for why one feels so bad. Abundant data indicate the high rate and extent of depression in those with TMD (Gatchel et al. 2006; Suvinen et al. 2005), and its relevance to OFP appears to be similar (Durham et al. 2015).

**Anxiety**

Anxiety, the vague sense that something terrible will happen manifests as worry and pervades medical settings. Anxiety may be situation specific (prior to an injection), or it may be generalized (occurring in relation to every event in one’s life). Anxiety amplifies pain perception (Robinson et al. 2004) and leads to hypervigilance: heightened attention to the experience of the body and subsequent amplification of those signals (Cioffi et al. 2016). In turn, pain will lead to heightened anxiety due to worry about the pain episode and worry about the sufficiency of a treatment. Anxiety has physiological correlates, such as increased heart rate or muscle tone or sweating from the apocrine glands, as well as behavioral correlates, such as twitching behavior or rapid speech. Anxiety is a distinct construct from depression, yet both symptom states frequently co-occur, which is why the PHQ-4 is an excellent screening instrument for “distress” that accompanies anxiety and depressive states. Abundant evidence indicates the relevance of anxiety to pain disorders including TMD (Fillingim et al. 2011), and its relevance to OFP appears to be similar (Aggarwal et al. 2006).

**Somatoform Disorders**

The understanding of the somatoform disorders has changed with each edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, reflecting the difficulty in understanding the core structure of the disorders contained within this group which all involve the reporting of physical symptoms not accompanied by appropriate signs supportive of a disease diagnosis. “Somatization” is a well-known label for these types of disorders, with somatization referring to high symptom reporting without a disease diagnosis and accompanied by use of the symptoms to avoid social or day-to-day responsibility (entering the Parsonian Sick Role) (Parsons 1975). Somatization became perhaps well known due to its use as the label for a physical symptom scale in the SCL-90 (and later SCL-90R), as used in the RDC/TMD, but “somatization” was not assessed by that scale; only frequency of physical symptom reporting was assessed. Consequently, the term “somatization” should not be used unless an appropriate psychiatric interview is employed. Physical symptom reporting without a corresponding disease may be, among currently defined psychiatric disorders (American Psychiatric Association 2013), somatic symptom disorder, illness anxiety disorder, conversion disorder (and qualified according to involved system), psychological factors affecting other medical conditions, or factitious disorder. Due to the reasonably low prevalence of the somatoform disorders (Escobar et al. 1998), versus the reasonably high prevalence of physical symptom reporting alone (Lorduy et al. 2013), attention has shifted to a more descriptive approach, variously termed as functional disorders, medically unexplained symptoms, and symptoms without medical utility (Kirmayer and Robbins 1991; Rief and Broadbent 2007). For pain disorders, this shift is useful, but it must be noted that it does not provide an explanation to the patient that allows them to move from a liminal state of neither being healthy nor validly “ill” into a legitimate state of illness. This comes with advantages and disadvantages for the patient.
Physical symptom reporting may reflect several different mechanisms. A commonly suspected mechanism is increased tendency to report about the body; in other words, the individual focuses on the body as something to talk about and to worry about (which, if extreme, is referred to as hypochondriasis). Another suspected mechanism is hypervigilance to possible problems in the body, and hence one’s sensory perception is heightened resulting in the report of experiences (e.g., ache) that everyone may have but does not report because it does not exceed the perception threshold (Rief and Broadbent 2007). An extension of this mechanism underlies occlusal dysesthesia (Melis and Zawawi 2015) and may be reflected in various symptoms that accompany the persistent OFPs (Aggarwal et al. 2008; Peters et al. 2015). A third mechanism refers to changes in the body that are accurately detected and perceived, thereby not being overreporting and not being hypervigilance and amplification; symptoms reported here reflect interoception, the experience of our bodily states outside the special senses (Craig 2002). Craig has proposed an important model regarding pain processing which directly incorporates interoception as a core part of what emerges as pain experience, particularly when pain becomes chronic (Craig 2003).

At present, the full understanding of physical symptom reporting remains unknown. A large number of symptoms in the body or in the oral region strongly predict new onset of TMD (Ohrbach et al. 2013; Sanders et al. 2013), and a very large number are commonly reported within a matrix of multiple comorbid disorders (Aaron et al. 2000; Kanaan et al. 2007; Ohrbach et al. 2011). Until a better understanding emerges regarding mechanism, interpretation, and treatment of multiple physical symptom reporting, our recommendation is for the clinician to use the body manikin as a direct measure within the suggested short screening instrument set of multiple pain disorders and to follow up via interview for pain locations marked on the body. A medical history checklist can be used as an alternative, albeit less efficient, version of the PHQ-15 and when a pattern of responses indicative of functional disorders is present, to follow up via interview with a clinical psychologist. The available evidence underlying the OFPs suggests that they are no different from TMD and other common pain disorders with regard to the probable importance of physical symptom reporting. While we do not at this time know what high levels of physical symptom reporting means, it seems highly plausible that clinical hypothesis generation and evaluation will be productive.

**Catastrophizing and Self-Efficacy**

Catastrophizing and self-efficacy are considered together as recent evidence from studies in TMD suggests that, together, they are among the few reproducible psychosocial therapeutic targets in all TMD patients (Litt and Porto 2010) and may help predict treatment response (Litt and Porto 2013). Catastrophization about pain is “characterized by the tendency to magnify the threat value of pain stimulus and to feel helpless in the context of pain, and by a relative inability to inhibit pain-related thoughts in anticipation of, during or following a painful encounter” (Quartana et al. 2009). Perhaps unsurprisingly, therefore, higher levels of catastrophization are linked to increased healthcare utilization, expression of pain, and poorer outcomes of treatment. Thus, catastrophization is important to identify and manage in the biopsychosocial management of persistent OFP.

As a construct self-efficacy may be linked to catastrophization as self-efficacy refers to the level of belief an individual has in their own ability to plan and bring about a course of actions for their own benefit (Bandura 1977). High self-efficacy emerges when individuals can be confident in their ability to self-manage their symptoms (which the dental clinician plays a critical role in fostering), and catastrophizing will lose its relevance. Alternatively, the clinician can foster learned helplessness by not helping the patient to be independent in their self-management, and catastrophizing will continue unabated. In this respect, therefore, self-efficacy may be affected
by catastrophization, and in studies examining both constructs in TMD patients, both have been found to mediate outcome of therapy (Brister et al. 2006; Litt and Porto 2013; Turner et al. 2005, 2006).

**Fear Avoidance**

The fear-avoidance model emerged from behavioral observations of people reporting pain that was not congruent with behavior or physical findings. The fear-avoidance model begins with an event (e.g., injury) that can either proceed toward normal tissue healing and resolution of the pain or toward persistent pain (Vlaeyen and Linton 2000). The model explicitly identifies the direct experience of pain and its interpretation as the initial step, from which no fear of the pain leads to engaging in the appropriate behaviors that will result in recovery from the injury. In contrast, fear of the pain leads to pain catastrophizing, pain-related fear, avoidance, disuse and depression, and disability, feeding forward to further pain experience and the absence of recovery. In general, pain-related catastrophizing and fear of pain focus on the pain as a signal that something in the body is broken, and therefore any activity that leads to pain should be avoided in the belief that “healing” will be facilitated. Unfortunately, however, the opposite is true and disuse breeds disrepair and further dysfunction.

Fear of pain is measured via several instruments, of which the Tampa Scale for Kinesiophobia (TSK) (Kori et al. 1990) is the best known and perhaps most used. Using the TSK, for example, as a measure of the core construct, this model has very strong utility for back pain (Boersma and Linton 2006). The TSK item content is largely focused on body activities, and consequently it is not so suitable for the masticatory system. Consequently, an adaptation of the TSK was developed for the masticatory system, the TSK-TMD (Visscher et al. 2010), but very little has been published to date in the original Dutch or English versions or the few language adaptations made so far.

The applicability of the fear-avoidance model to both back pain and TMD pain appears to revolve, at a mechanistic level, around motor system responses as part of the avoidance behavioral pattern. This perspective would suggest that fear avoidance is not applicable to most other OFPs. However, the model itself is a more person-level model with regard to how behavior and beliefs affect the central processing of pain (and thereby influencing next central nervous system operations), and in this perspective, the model would likely be applicable to the OFP conditions. Consequently, the clearly plausible hypotheses relating fear of movement to recovery among those with injury to the masticatory system and the probable emergence of chronic pain among some of those individuals warrant investigation (Wall 1979), and present data suggest that this perspective is applicable to OFP as well.

**Psychosocial Interventions**

“Psychosocial intervention” is a broad term that has been used to group a wide variety of techniques under one heading in a recent systematic review for the Cochrane Oral Health group (Aggarwal et al. 2011). This systematic review explains that psychosocial interventions are thought to work in persistent OFP through focusing on either inactivity or overactivity, in relationship to persistent OFP. So, for example, inactivity may be due to fear of moving the jaw because of the pain from myalgia; the inactivity further leads to physical disuse, disrepair, and dysfunction, and a vicious cycle emerges. This sequence of events was described previously under the fear-avoidance model. An example of overactivity may be due to anxiety because of uncertainty regarding what the myalgia represents in terms of underlying pathology or possible long-term damage or disability to the face or jaw; the anxiety will feed into central and peripheral processes related to pain, thereby amplifying pain perception, as well as into generally heightened motor tone, both of which perpetuate, if not worsen, the pain.
Both inactivity and overactivity require direct treatment, and either is targeted by using a variety of techniques generally classified under psychosocial interventions that largely fall into two groups: cognitive techniques and behavioral techniques. More commonly, however, both cognitive and behavioral techniques are combined as cognitive behavioral therapy (CBT). Typically, psychosocial interventions will be individualized for the presenting patient, with tailoring based on a resultant profile from the Axis II instrument scores, e.g., a high GCPS grade will point to pain-relevant functional factors, while a low GCPS will point to non-pain-relevant factors as potentially more important, and specific details that emerge from a careful behavioral analysis of which behavior, at which time, under which circumstances are adopted or should be adopted. Such psychosocial interventions will include both cognitive and behavioral techniques.

Socratic questioning, perhaps the oldest form of cognitive therapy, is an essential component that supplements the psychometric data from the patient in order to fully understand the patient and the underlying constructs related to their complaint. The understanding of the involved constructs built up by the questioning will then be fed back, through a process known as guided discovery, to the patient in order to explain how the various biopsychosocial factors interrelate in order to help prolong, potentiate, or precipitate their complaint. This feedback can be accomplished using any one of a variety of methods, but one of the easiest to use and exemplify in the text of this chapter to nonclinical psychologists is what is colloquially known as the “hot cross bun” method (Fig. 1) but also known as the five-part or generic model of CBT (Padesky and Mooney 1990; Sage et al. 2013).

The hot cross bun method (see Fig. 3) uses the interrelationship of our environment, thoughts, physical sensations, emotions (feelings), and behaviors to explain how any one of these five components can influence another. This is completed as an iterative and interactive process with the psychologist and the patient contributing to completing the model. So to continue our worked example from the very first section of this chapter, a person with a disk displacement with reduction which is painful: they experience loud clicking when eating, and this can occasionally be painful (physical sensation); the clicking and pain cause
them anxiety (emotions/feelings) as they believe there may be ongoing damage in their jaw (thoughts), the click occurs during a meal with friends, and one of the friends remarks on it in a concerned manner (environment) which reinforces the anxiety over ongoing damage. All of these processes converge and amplify the pain experience. In this way the biopsychosocial aspects of the persistent OFP complaint are crystallized for the patient; one role of the psychologist is to explain that while the anxiety is normal, there is little evidence to suggest there is ongoing damage to their jaw joint and a very low chance of the present disk disorder progressing to a disk displacement without reduction with limited opening; moreover, it would be emphasized that if this were to occur, it can be simply managed without the need for surgery. This explanation in itself starts to form part of a cognitive technique of education via enhanced medical literacy as well as addressing reality via reappraising thoughts; this could be supplemented by a behavioral technique for the patient to use if they feel themselves getting anxious about their jaw. The remainder of this section will give a brief summary of some of the more common cognitive and behavioral techniques employed in CBT.

Reappraising Thoughts. Modifying thoughts to change the present reality of one’s mind is an ancient method, one central to many religious traditions as well as cognitive behavioral therapy traditions. The general sequence is to identify a thought as underlying one’s current distress, challenge the thought for its reality base, provide a corrective thought in its place, engage in any behavior implied by the corrective thought, and observe the outcome in order to obtain additional evidence for the next time the troublesome thought occurs. For example, a thought associated with the distress of a bad pain flare-up might be, “This pain will never go away,” and this is known as pain cognition. Challenging this thought quickly leads to the memory that all other similar pain flare-ups did in fact resolve back to one’s usual level of pain and that a flare-up is not the same experience as the usual ongoing pain; the corrective thought might be to remind oneself, “Taking time to stop pushing myself has always worked in the past” and to then do exactly what the corrective thought indicates; and observing the outcome could lead to a thought such as, “When I stop pushing myself and stop punishing myself, my pain is not nearly as bad as it seems in the middle of the flareup when I feel helpless.”

Cognitive Interventions

Distraction. Turning one’s attention to other matters, particularly ones that are pleasant or meaningful, is a well-known active coping method that many people use intuitively for reducing worry and pain, for example. Active imagery is one way to intentionally implement this method – for example, imagining a particular problem visually inside a bubble and letting it float away into the distance. High-functioning individuals often use this method extensively, which can be quite effective over the long term, in reducing pain intensity; however, a long-term cost is that one is also distracted from the circumstances tied to one’s pain or stress, and thereby initiating situations can continue unchanged.

Mindfulness. In its simplest terms, mindfulness consists of moment-to-moment awareness of what is present to one’s senses, and to simply accept that experience without judgment and without avoidance. In this sense, distraction is a tool opposite to the process one might attempt to cultivate via mindfulness. The origins of mindfulness perhaps lie within Buddhist psychology, but the process is found in other traditions as well such as in hatha yoga. Mindfulness can be implemented in a highly structured manner via training as part of stress reduction or as part of cognitive therapy for depression (Kabat-Zinn et al. 1985; Teasdale et al. 1995), or it can be implemented in a much less structured manner. The evidence for efficacy seems to be independent of structure of implementation (Farb et al. 2015); the implication is that intent may be more powerful than mode of training. Mindfulness is highly complementary with most other behavioral and cognitive methods; however, one caveat is that providers...
should have extensive direct experience with the method in order to understand the various difficulties and challenges that emerge when patients attempt to learn the method. This caveat applies to all of these methods.

**Pros and Cons.** This exercise helps facilitate decision-making (Sage et al. 2013). It involves establishing a list of all the potential choices for this particular decision. Once the list is established, the patient then removes any that would not get chosen irrespective of their importance rating, for instance, the choice might be totally unpalatable or impossible. The patient then writes down the advantages and disadvantages for each option and ranks the importance of each as an advantage or disadvantage. Total scores are then generated for each choice option on the basis of their advantage and disadvantage scores, and the one that scores the best is usually the one to choose. There is also an opportunity to reflect, reconsider, and rescore, a process which, in itself, may tell the patient something about their value set in relationship to this particular decision.

**Continua.** Continua can be used with Socratic questioning to examine where patients see themselves on a continua. The exercise is begun by asking the patient to create a visual analogue scale (VAS) – that is, a straight line about 10 cm in length – with two extreme anchors; for example, the patient might write “not at all anxious” on the left side and “as anxious as I have ever been” on the right side of the line. The context for the anxiety rating, in this example, might be about a disk displacement with reduction becoming a disk displacement without reduction with limited opening. The patient is then asked, “Where are you on that scale?” and, following their indication where they currently are, the patient is asked, “Where would you like to be on the scale?” The evidence for their being at the point they indicate on the scale is then explored in depth and so too are facilitators and barriers to moving to the desirable point on the continua (VAS scale) then explored systematically. A similar approach can be used if it is a generic concept or quality one is examining, for instance, success: the patient can grade a person they perceive as successful first and then grade themselves following this, and the same exploration can then occur.

**Positive Log.** This is a very simplistic technique to remind patients of the successes they have had in the time since the last visit. The patient is asked to keep a diary (log) of the successes they have had since their last visit, and then the provider can review it with patient and explore with Socratic questioning.

**Behavioral Techniques**

**Breathing Control.** Control of the breath is one of the most easily approached methods for self-regulation. However, skill in breath control requires, for many individuals, extensive practice; for pain patients who, in general, more often do not utilize full abdominal breathing, acquiring such skills can be even more difficult. The shift from tightly controlled chest breathing to a more fluid and relaxed abdominal breathing induces paradoxical anxiety in many individuals; this will be particularly true if psychological trauma such as from sexual abuse is part of the history. Thus, what can seem like a simple process of teaching a skill can rapidly become complex due to the various issues that permeate a developmental history.

Abdominal breathing control is associated with measurable changes in heart rate, slower respiration, and improved oxygenation. It is perhaps the self-regulatory method of first choice because it can be implemented at any time, in any circumstance; because of the immediate physiological changes induced by such breathing control, its use as an immediate intervention tends to be highly rewarding to the individual. It is noteworthy that breath control necessarily requires the inclusion of mindfulness if only for those moments of breath control, whether the individual is aware or not that that is being done. Joint implementation of two techniques results in a very useful synergy.

**Relaxation.** Relaxation skills can be applied to a selected body part, perhaps as part of oral parafunctional behavior control, or to the full body. When applied to a targeted body part, the effect is understood to necessarily focus on reductions in
motor cortex activation. When applied to the full body, the same reasoning is often used, yet the application of relaxation skills to the full body can be taught in alternative ways, such that the focus is on creating ease in the mind, rather than restricted to only the body as the focus. A large and long history of literature exists that describes these various aspects of relaxation. Relaxation can also be taught as a method for practicing mindfulness, and it can be induced via self-hypnosis. Relaxation training necessarily requires setting priorities, in terms of making time for practice, and dealing with frustration, as attaining skills with relaxation are unlike most skills: one does not reach the goal by necessarily trying harder. Indeed, forced attempts to “relax” typically cause the opposite to occur. Finally, relaxation can be augmented with a range of context-related techniques. For example, cognitive reappraisal and being nonjudgmental are central to maintaining the focus during a relaxation process. Relaxation has been regarded as the self-regulatory method with the strongest support for a medium effect size in efficacy (NIH 1995), and to date, no chronic pain disorder has been identified that does not benefit from the patient acquiring this skill.

Changing Behavior: Graded Practice. A common cause of failure for any treatments that require behavioral change is expecting too much, too quickly. Both clinician and patient are susceptible to this understandable hope for rapid improvement. Real behavioral change occurs at a pace specific to the given individual, and when the changes made are rooted in correct understanding by the patient, the changes tend to be more stable. In contrast, rapid change, regardless of motivation, can result in early burnout and abandonment of the change process.

Activity: Activity levels, as distinct from exercise, can range from inactivity to overactivity. Inactivity is more often found in individuals with back pain, whereas overactivity typically accompanies headache and TMD pain. The implication of inactivity for back pain is well understood, whereas the implications of overactivity in head pain are as yet not really understood, though the cyclic pattern between inactivity due to pain exacerbations followed by overactivity when the exacerbation resolves (and which leads to the next exacerbation) is well understood. This pattern is referred to as problems in pacing activities and while the conceptual basis leads to readily understood therapeutic intervention, i.e., leveling out activity demands in order to have neither overactivity (and thereby no triggers for pain exacerbations) nor inactivity (and thereby avoid the feelings of guilt that accompany decreased activity levels). The role of this mode of therapeutic intervention for TMD is unknown and, by extension, for OFP as well.

The other aspect of activity pertains specifically to physical exercise. Much data exist for why regular exercise is beneficial for overall health, and it has been speculated that regular exercise serves to regulate various aspects of the pain system, in particular the pain modulatory system. However, the data in general for pain disorders remains mixed. If nothing else, if regular exercise enhances mood, then it is worthwhile in the individual with pain.

Behavioral Experiments. Patients will often challenge tenets underlying a CBT model, and indeed the model intrinsically encourages such challenges. “Will relaxation really help my neuropathic pain?” might be appropriately asked by a patient with that type of diagnosis. A behavioral experiment is typically the most effective way to answer such a question: request the patient to commit to the necessary period to sufficiently master the identified skill, relative to the nature of the challenge, and then develop a care plan that monitors the use of the skill along with situations and symptom reporting. Intentional periods where the skill is not to be used can often help create the necessary contrast, whereby the utility of the skill
in the service of best responding to the challenge can be evaluated. The goal, made explicit to the patient is to discover which treatments work best for this patient, under what circumstances.

**Problem-Solving.** Similar to behavioral experiments, acquisition of cognitive and behavioral skills needs to be accompanied by an understanding of what works, when, as well as acquiring an appropriate understanding of what is a reasonable expectation. Trying to use a newly learned relaxation skill during the middle of a migraine episode will probably not result in clinical change; problem-solving would approach the delay in the use of the skill as opposed to earlier in the episode, and problem-solving would focus even more on circumstances surrounding the pain onset and choices at that point in what, if anything, could have been done in the way of enhancing self-regulation. The goal is for patients to become independent problem-solvers by better understanding all aspects of behavioral approaches to treatment: circumstances related to triggering or aggravating factors for pain episodes; knowledge of their unique symptom progression, what coping skill works at which stage of a pain episode, understanding their mastery level of different acquired skills, knowledge of what symptoms can or cannot change, and developing skill in how to monitor the process.

**Pharmacology.** The indications and types of medications used to treat OFP are beyond the scope of this chapter and are covered elsewhere in this text. However, one implication of the biopsychosocial model is that pharmacological manipulation of a bodily system should be considered within the larger context in order to maximize the potential of the medication to help the individual. A simple example is to prescribe a medication with the assurance to the patient that the medication will likely not be at all effective; clearly, clinicians do not do that, but why not? The intuitive understanding is that medication response is not solely a province of the chemicals manipulated by the medication but rather the individual’s beliefs about the medication will help shape the body’s response.

For some types of medications, such as analgesics, the research data are very clear that placebo, or expectation, shapes medication response and reported side effects; the same is equally true for medications used to treat psychiatric conditions. What about medications that affect systems more removed from the CNS, for example, the inflammatory system and infections? Antibiotic response does not seem to be plagued by placebo effects, yet the person response for healing can very much be influenced in directions opposed to the healing that a prescribed antibiotic would otherwise induce. An individual refusing to rest, for example, as part of the healing response to antibiotic treatment for an overwhelming infection would contribute to an ongoing infection, despite the dose of the antibiotic. Similarly, the provision of all medications should be accompanied by considerations of what behavioral changes are needed in order to maximize the value of the medication. This clear implication of the role of biopsychosocial model in treatment is, however, difficult to implement for several reasons: significant practitioner time is required to assess the person in all indicated dimensions, the time required to interpret the results of that assessment in relation to the physiological processes to be altered with the planned medication, and the time (and skill) required to address and successfully implement a behavioral self-care plan alongside the planned medication. Surgeons perhaps perform this process more instinctively, because they can readily observe the immediate and obvious consequences when normal tissue healing following a surgical procedure is not proceeding as expected, weigh this in the balance, and request behavioral changes from the patient; consequently, surgeons are more behaviorally oriented than they might describe themselves. In persistent OFP conditions, in contrast, the important parameters for inclusion into behavioral management that would accompany medication management are not obvious, are not easy to address, and are not likely to be easy to measure in terms of process.

Another example may help. Consider the use of an analgesic that could be used for breakthrough pain as part of a biopsychosocial treatment approach that also includes, say, relaxation
skills as part of reducing anxiety that amplifies the person’s pain in certain situations. If, in this example, the medication is not clearly prescribed as intended for rescue, when the pain is beyond the patient’s self-management skill level, the patient may rely solely on the medication, because it is certainly easier than invoking a relaxation response, and thereby the patient begins to give insufficient (or no) attention to skill building in relaxation. The patient may, however, report at a follow-up consultation that “The relaxation process does not help,” and the clinician may conclude that more analgesic needs to be prescribed. Similarly, psychopathology will undermine analgesic response (Wasan et al. 2005), and if the clinician has not pursued the sufficient assessment to understand this patient, the lack of expected response to the medication may be interpreted as insufficient dosing rather than other factors within from the biopsychosocial model affecting analgesic response or adherence to the management plan.

Conclusions and Future Directions

As science moves forward and further explorations of the biopsychosocial nature of, and influences on, orofacial pain conditions are conducted, it will be possible to produce much more tailored and multimodal programs of care for individuals. These more tailored and multimodal approaches will hopefully increase the therapeutic yield of standard biomedical therapies such as pharmacological or surgical approaches. Adjunctive to this, we will be better able to assess the biopsychosocial outcome of therapeutic interventions so that we understand what pieces of the therapeutic jigsaw remain to be put into place for programs of care to be more effective at a population and patient level. The key message readers of this chapter should take away is that the biopsychosocial model of illness and healthcare is here to stay, and if it is ignored, then intervention outcomes may suffer, and relationships with patients may become strained.

Cross-References

- Arthritic Diseases Affecting the TMJ
- Burning Mouth Syndrome
- Classification of Orofacial Pain
- Clinical Evaluation of Orofacial Pain
- Headache
- Internal Derangements of the Temporomandibular Joint
- Masticatory Muscle Pain
- Neuropathic Orofacial Pain
- Neurophysiology of Orofacial Pain
- Neurosensory Disturbances Including Smell and Taste
- Neurovascular Orofacial Pain
- Oral Appliance Therapy for Sleep Disordered Breathing
- Oral Manifestations of Systemic Diseases and their Treatments
- Orofacial Pain Associated with Oral Mucosal Disease and Cancer
- Orofacial Pain in the Medically Complex Patient
- Orofacial Pain and Sleep
- Sleep Bruxism
- Sleep Medicine for Oral Medicine Specialists

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