



Characterizing the orthodontic patient's purchase decision: A novel approach using netnography

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Introduction: A deeper and more thorough characterization of why patients do or do not seek orthodontic treatment is needed for effective shared decision making about receiving treatment. Previous orthodontic qualitative research has identified important dimensions that influence treatment decisions, but our understanding of patients' decisions and how they interpret benefits and barriers of treatment are lacking. The objectives of this study were to expand our current list of decision-making dimensions and to create a conceptual framework to describe the decision-making process. **Methods:** Discussion boards, rich in orthodontic decision-making data, were identified and analyzed with qualitative methods. An iterative process of data collection, dimension identification, and dimension refinement were performed to saturation. A conceptual framework was created to describe the decision-making process. **Results:** Fifty-four dimensions captured the ideas discussed in regard to a patient's decision to receive orthodontic treatment. Ten domains were identified: function, esthetics, psychosocial benefits, diagnosis, finances, inconveniences, risks of treatment, individual aspects, societal attitudes, and child-specific influences, each containing specific descriptive and conceptual dimensions. A person's desires, self-perceptions, and viewpoints, the public's views on esthetics and orthodontics, and parenting philosophies impacted perceptions of benefits and barriers associated with orthodontic treatment. **Conclusions:** We identified an expanded list of dimensions, created a conceptual framework describing the orthodontic patient's decision-making process, and identified dimensions associated with yes and no decisions, giving doctors a better understanding of patient attitudes and expectations. (*Am J Orthod Dentofacial Orthop* 2017;151:1065-72)

A critical time for deep understanding and relevant communication with a patient is when the orthodontist presents their diagnosis and treatment plan. In response, the patient enters into a unique analysis "aimed at finding courses of action that are feasible or satisfactory in the light of multiple goals and constraints."¹ This all-encompassing definition of decision making shows the complexities in understanding consumer behavior and purchase decisions. An orthodontist

who has practiced for any period of time has seen patients with mild malocclusions deeply desire treatment whereas patients with severe malocclusions decide not to pursue treatment. We hope that by investigating orthodontic decision making we can address some of the inconsistencies in a prospective patient's decision.

Medical decision making is a field in consumer behavior and medicine with many similarities to orthodontic decision making. Multiple theories have been developed to capture the complexity of decision making to help practitioners communicate with patients.^{2,3} In addition to descriptions of different components of the decision, these theories often include conceptual frameworks that elucidate the basic process. The framework is a visual display of the decision model, showing organizational flow and relationships. Many decision-making models are broad, capturing many different types of decisions; however, when applied to a specific decision or medical procedure, the model becomes more accurate and precise. Some models describe the decision as a cost-benefit analysis, whereas others

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might describe a decision by identifying important themes that resonate with patients.⁴⁻⁷

Orthodontics has made significant gains in understanding motivations in patient decisions through focus groups and interviews.⁸⁻¹² However, we have an incomplete picture. Psychosocial research suggests that people often do not express why they do what they do accurately in formal settings in which they prioritize set benefits.^{13,14} Additionally, these studies have rarely focused on decision making or included conceptual frameworks.

Web-based consumer research provides a natural and unobtrusive way to observe people's reported life experiences. One approach, termed netnography, is to apply principles of ethnography to Web content with the same goals of better understanding desires, symbols, and decision-making influences.^{13,15,16} Ethnography is a traditional qualitative research method that stresses immersion into the social and cultural context of the phenomena being studied. Applying netnography techniques to orthodontics is a new research concept, even though many people are talking about their orthodontic desires and experiences online.

The aim of this study was to better understand the orthodontic patient's decision about receiving orthodontic care by expanding the list of decision-making dimensions, creating an associated conceptual framework, exploring relationships between dimensions, and finding which dimensions are associated with yes and no decisions.

MATERIAL AND METHODS

This study received an institutional review board exemption (number 14-1254) from the University of North Carolina Office of Human Research Ethics.

Forums that were rich in decision-making concepts about orthodontics were found on the Web using Google search from November 15, 2014, to July 31, 2015. The following terms and phrases were searched by the primary researcher (J.W.P.): "I think I need braces," "braces forum," "not sure about orthodontics forum," "are braces worth it," "can't decide if I should get braces," and "should I get braces." Forums were selected if they contained 2000 or more words, a minimum of 4 blog participants, interactions between users, and in-depth explanations. The researchers did not participate in any discussion. No user names or passwords were created to access these forums, and all content was classified as public data. Names were removed from the data. The text was converted to rich text format (.rtf) and then imported to ATLAS.ti, a qualitative analysis software program that assists with data organization and inquiry.

Analysis was performed with the techniques presented by Susanne Friese¹⁶ in *Qualitative Data Analysis with ATLAS.ti*, which aims to make qualitative data analysis more systematic and transparent. This methodology includes many traditional grounded theory techniques, with goals of simultaneous data collection and analysis, pursuit of emerging themes, discovery of basic social processes, inductive construction of categories that explain and synthesize processes, sampling to refine categories, and integration into a theoretical framework.¹⁷

An initial list of codes, which are words or phrases that describe ideas, emotions, and themes related to the research question, was created based on previous qualitative orthodontic studies.^{8,10} Additional codes were developed as ideas or concepts emerged. Also, if the person's decision to have orthodontic treatment was clear from the data, a yes or no decision was recorded. Additional forums were analyzed as new ideas continued to emerge. The data were collected under common code names, and comments were used to delineate exactly what the code described. This was an iterative process since the same data were analyzed multiple times, and new data were added and the code list adjusted to better describe the decision-making process. The data were then assessed and coded for common themes, emotions, and values. Results were shared with peers from the psychology, business, and orthodontic fields to prevent bias. New data were added until a saturation point was reached. Memos were used to record research ideas and as a research log.

A major part of the data analysis was creation of the specific codes to describe themes in the data. The code list was finalized as dimensions and sub-dimensions of the decision and was organized into domains, providing a structure for understanding the extensive and complex list of dimensions. A conceptual framework was created that was grounded in current medical decision-making models and orthodontic qualitative research but adjusted using the identified dimensions and domains. Further analysis was done with the co-occurrence tool, which assesses whether a respondent linked dimensions together in the responses. Strength of association between codes was calculated with a cocitation frequency formula.

RESULTS

Data were collected from 15 Web sites. Table 1 lists the Web sites and the number of comments coded from each Web site. The aggregate data provided new information from the patient's perspective. Fifty-four dimensions were created and organized to reflect all aspects of orthodontic decision making discussed

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