

Establishing Expert Consensus for SOAPP Version 1.0

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Development of the SOAPP Version 1.0

- Concept mapping procedures were used to develop the content of the SOAPP.
- An expert panel generated statements reflecting important concerns to be addressed when considering a pain patient for long-term opioid therapy.
- A sample of providers and researchers sorted and rated the statements.
- A Concept Map was created with eight concept clusters: (1) Psychosocial Problems, (2) Psychiatric History, (3) Substance Abuse History, (4) Antisocial Behaviors/History, (5) Doctor-Patient Relationship factors, (6) Medication-related behaviors, (7) Emotional Attachment to Pain Medicine, and (8) Personal Care & Lifestyle Issues.
- Pattern Matching analyses revealed very high correspondence between the importance ratings of doctoral-level and non-doctoral level providers.
- Concept Mapping results were used to create an alpha version of the SOAPP.

The basic idea behind the SOAPP version 1.0 was to develop an initial version of a self-report measure intended to predict patients' abuse potential. Version 1.0 is different from the SOAPP Version 2.0 (to be developed under a NIDA grant) in that the SOAPP Version 2.0 will be developed empirically and the SOAPP Version 1.0 will be based on a consensus of pain and addiction medicine specialists.

Concept Mapping Introduction. Consensus on a particular topic is determined using a method called concept mapping. Concept maps visually and mathematically depict critical relationships among the ideas generated by a group. Use of the concept mapping procedure has been steadily growing over the past 15 years (Rizzo-Michelin, 1997). Although several approaches to concept mapping have been developed, the approach detailed by Trochim (1989a, 1989b; 1993) was selected for use in the present project based on its well-documented use in different kinds of projects. Specifically, Concept Mapping software (version 1.71; Concept Systems, Inc., 1996) was utilized to generate the concept maps. This software uses a combination of multidimensional scaling and cluster analysis to generate the concept maps and to compare the patterns of importance of various concepts as rated by subgroups of stakeholders.

Concept Mapping Step 1: Statement Generation

The first step in concept mapping entails obtaining a group of experts or other stakeholders to generate a series of statements/ideas in response to a focus prompt. Responses to the focus prompt are then edited and a final list of statements is prepared for the sorting and rating process.

Participants. Twenty-six individuals were recruited to participate in the item-generation phase of the concept mapping procedures. The experts are providers who are pain specialists, primary care providers who serve patients with chronic pain, nurses, and support staff from across the country. These respondents were recruited from Dartmouth Hitchcock Medical Center, Lebanon, NH, Jefferson

Medical College, Philadelphia, PA, Roswell Park Cancer Institute, Buffalo, NY, Brigham and Women's Hospital Pain Management Center, Boston, MA, and Mass General Hospital, Boston, MA. We were interested in obtaining input from a range of professional roles, including doctoral-level providers, nursing providers and staff. It was apparent during our naturalistic observations that the support staff, who also had significant interactions with these patients, had an important perspective on which patients exhibited aberrant medication-related behaviors. These respondents are characterized in Table 1

TABLE 1

	Male	Female	Representing a Minority Population	Years of Experience in the Field of Pain Management
Doctoral-Level Providers	12 MDs 1 DDS 3 PhDs 1 PsyD	1 PhD	Approximately 50%	Range 1 to 12 years (5 had over 7 years of experience)
Support Staff	1	3	Approximately 50%	Range 2 to 18 years
Nurses		4		Range 2 to 16 years

Procedures. The Inflexxion team developed a questionnaire to be completed by the respondents. The questionnaire presented the focus prompt and asked participants to provide at least 10 to 15 statements.

Focus Prompt. By establishing the context of the project, the focus prompt is a critical step in the concept mapping procedures. The focus prompt distributed to the participants in this project was:

“Please list indicators, or risk factors, of potential problems with opioids in patients considered for opioid therapy. For this task, we are especially interested in predictive indicators a provider probably should observe or inquire about when making a decision to put a given patient on a chronic opioid therapy. Generate items that describe past history, current conditions, or specific characteristics of chronic pain patients being considered for opioid therapy who may be vulnerable to future problems.”

Creation of the Final List of Statements. The participants generated a total of 296 separate statements. These statements were examined for duplicates. Removing the duplicates resulted in a list of 244 different statements. Based on experience, the maximum number of statements participants can realistically sort and rate is around 100, we further reduced the number of statements by having the Inflexxion team members rate each statement on “Importance” and “Quality of Wording,” on a scale from 1 “not at all important/very poor wording,” to 5 “very important/excellent wording.” Statements that achieved an average importance rating of 3 were retained. Statements with an average quality of wording rating of less than 3 were reworded or dropped. This resulted in a final list of 107 statements. These statements were then subjected to the sorting and rating steps required for concept mapping.

Concept Mapping Step 2: Sorting and Rating of Statements

The next step in concept mapping is to arrange for a group of stakeholders to sort and rate the statement list. These data then become the source of analysis in the concept mapping software.

Participants. The typically recommended sample size for concept mapping is 15 (Trochim, 1993) with a minimum recommended sample of 10. In an analysis of 38 concept mapping studies, Trochim (1993) found the mean number of participants (statement raters and sorters) to range from 13 to 14. Given the overwhelming interest in this project from Listserv members and our interest in gaining a broad representation of viewpoints, we elected to increase the size of the concept mapping sample. Toward this end, 39 professional participants were recruited from the International Pain and Chemical Dependency Listserv. An announcement on the Listserv requested volunteer participants with clinical and/or research experience in the fields of pain and/or addictions. The participants' characteristics are summarized in Tables 2 and 3.

TABLE 2

	Male	Female	Professional Setting			
			Academic	Clinical	Academic/ Clinical	Other
Doctoral-Level	17 MD 4 PhD 1 PsyD 2 JD	4 PhD	15%	50%	35%	2%
Nursing	1 MSN/NP	6 MSN/NP 4 RN	--	95%	4%	1%

TABLE 3

	10 or more years of experience working with pain and/or addictions population	Primary Specialty	
		Pain	Addiction
Doctoral-Level	46%	69%	15%
Nursing	75%	100%	

Procedures. As described above, we utilized Concept Mapping software (version 1.71; Concept Systems, Inc., 1996) to generate the concept maps. Following procedures recommended by Trochim (1993), participants sorted and rated items using a computer program that was sent to them by email. The program walks participants through the process of sorting and rating each statement. Participants are asked to sort the statements into individual piles "in a way that makes sense to you." After sorting, all statements were also rated on a five-point scale on the importance of the statement to determining the addiction potential of a patient being considered for long-term opioid therapy.

Concept Map and Pattern Matching Analytic Approach. Concept mapping procedures permit an examination of the conceptual consensus observed in a group of stakeholders on a particular topic. The concept mapping software also provides a procedure called pattern matching, which allows the examination of the

extent to which various subgroups within the stakeholder group tend to agree (or disagree) on the importance of the emerging concepts. The current project employed both procedures in the process of developing the SOAPP.

Both the main statistical procedures (multidimensional scaling and cluster analysis) and the application of such in concept mapping have been well-described (Anderberg, 1973; Kruskal & Wish, 1979; Davison, 1983; Everitt, 1980; Trochim, 1989a). This section focuses on the processes and procedures used to carry out the specific analysis for the current study. The completed sorting data as well as the importance rating data was captured into a single project database for analysis. In this way, individual maps can be generated for each stakeholder group and pattern matches obtained both within and between groups. Also, because every participant supplied pile labels to each individual sort pile, it was possible to extract concept map cluster names (based on the top ten best pile labels). These were used as a starting point for live map interpretation by the Inflexxion team. The results of the interpretation session produced the final concept map, which guided the creation of the SOAPP instrument and formed the basis for the pattern matching analysis.

The pattern matching analysis involved consensus pattern matching between stakeholder groups (Trochim, 1989c). Pattern matching is a general method that can use concept mapping information in various ways. The Concept System software does pattern matching at the level of map clusters. Pattern matching allows for the combination of any two measures aggregated at the cluster level to see to what degree the measures match or whether they disconnect. By examining such combinations of measures, similarities and differences between stakeholder groups can be identified. Pattern matching is powerful in its implications, particularly as a measure of stakeholder consensus and divergence. In particular, we were interested in the extent of agreement between the doctoral-level participants and the nursing-level participants. It was reasoned that a high agreement ($> .70$) on the average importance of the various concepts between doctoral-level participants and nurses would indicate a reasonably strong consensus across two, somewhat different perspectives of the patients (i.e., doctoral level participants and nurses).

Pattern matching always involves two patterns based on measurements taken at the statement level. A pattern match itself consists of two elements. First, there is the visual picture of the match. Second, every pattern match has a correlation coefficient associated with it. The visual picture of the match is shown through a

ladder graph which is essentially two vertical scales (one for each measure) joined by horizontal lines for each cluster, showing comparative performance on the two measures. If the match is a perfect one, the lines are all horizontal and the resulting graph resembles a ladder of sorts. Ladder graphs are especially useful for quickly spotting disconnects between two measures. The correlation coefficient associated with each match describes the strength of the relationship or match between the two variables. The correlation ranges between -1 and +1. Values near 0 indicate the absence of a match; values close to either pole indicate stronger matches. Negative values imply an inverse relationship (when one measure is high, the other is low and vice versa). Positive values imply a synchronic relationship (high with high and low with low). Together, the ladder graph and correlation describe the relationship between the patterns of the two measures.

3 most important concepts:

- *antisocial behaviors/history*
- *medication-related behaviors*
- *doctor-patient relationship*

Concept Mapping Results

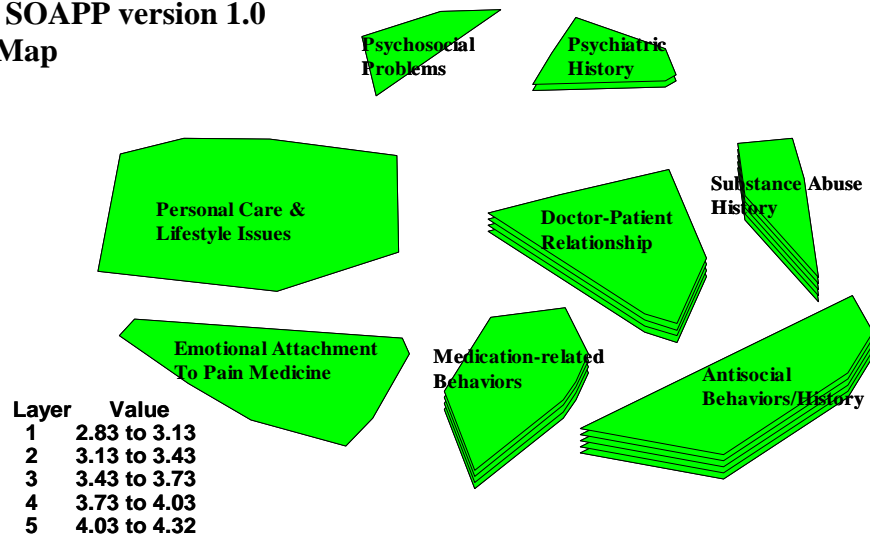
Based on the set of 107 statements, each of the 39 project participants rated the items' importance and sorted the statements individually. All data were analyzed as a single project using the Concept System (version 1.71). A single concept map was generated for this group by including the sorting and rating data from each participant. During concept map interpretation sessions, the Inflexion team considered between five and ten cluster map solutions. It was determined by consensus of the team that the most comprehensible solution was an eight-cluster solution. The cluster naming utility was used as an aid in the live map interpretation process. Cluster naming provides for the labeling of clusters based on the individual pile labels supplied by each sorter during the individual sorting process. Review of the cluster names and items included resulted in modification of some of the cluster names to aid in comprehension of the map. The analysis and interpretation sessions resulted in a final concept map which was used to create the pattern match discussed below. All participants were included in the creation of the final cluster map. This allows for direct, quantitative comparisons to be made in the pattern match analysis comparing the cluster ratings of the doctoral-level participants and the non-doctoral level participants (e.g., nurses).

Figure 1 presents the concept map for the SOAPP. Eight conceptual clusters were defined: (1) Psychosocial Problems, (2) Psychiatric History, (3) Substance Abuse History, (4) Antisocial Behaviors/History, (5) Doctor-Patient Relationship factors, (6) Medication-Related Behaviors, (7) Emotional Attachment to Pain Medicine, and (8) Personal Care & Lifestyle Issues. The map presents each cluster as having from one to five layers which represent the average rating of the statements included in the cluster. The legend presents the value range included in each layer. Thus, single layered clusters contain statements that were rated, on average, as least important with averages from 2.83 to 3.13. Conversely, clusters with five layers contain statements rated on average as most important, with averages from 4.03 to the highest average rating of 4.32 (out of a possible "5"). Note that the size of the cluster is a visual representation of the extent to which the items in a given cluster were sorted together. This means that the smaller the area of a cluster, the more often participants sorted these statements together. Conceptually, a small area suggests that the statements reflect a similar, probably well-defined underlying concept, whereas a larger area suggests a broader, perhaps less well-defined concept.

Eight identified clusters:

- *psychosocial problems*
- *psychiatric history*
- *substance abuse history*
- *antisocial behaviors/ history*
- *doctor-patient relationship*
- *medication-related behaviors*
- *emotional attachment to pain medicine*
- *personal care & lifestyle issues*

**Figure 1: SOAPP version 1.0
Concept Map**

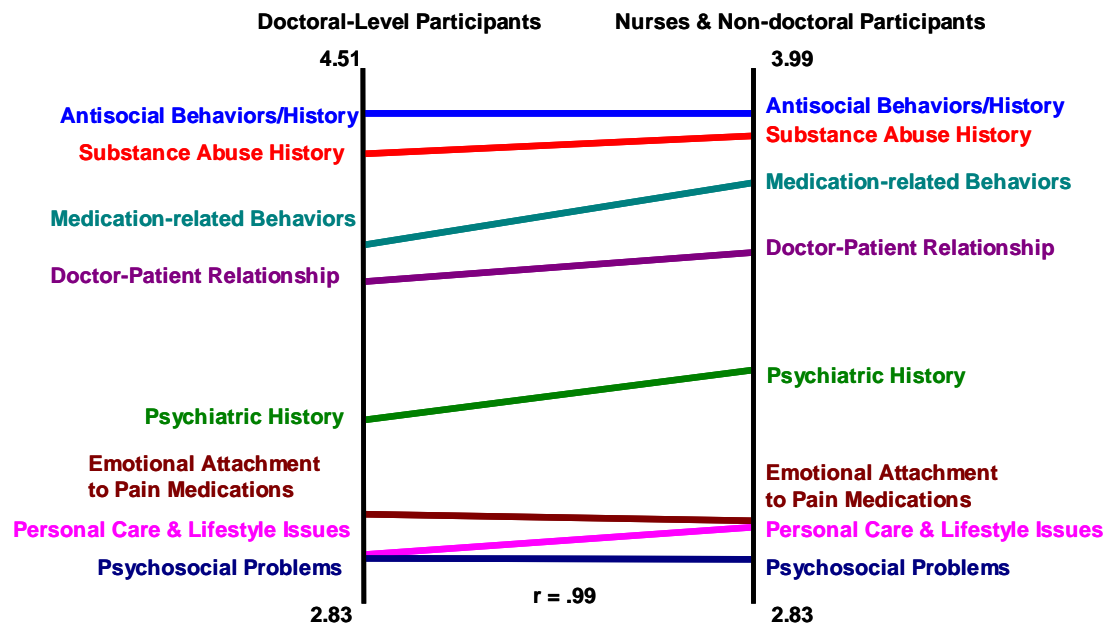


Concept mapping analysis and results conducted using the Concept System® software: Copyright 1989-2002; all rights reserved. Concept Systems, Inc.

Examination of Figure 1 suggests that the most important (more layers) concepts are: Antisocial Behaviors/History (average rating = 4.32) and Substance Abuse History (average rating = 4.20), followed by Medication-Related Behaviors (average rating = 3.94) and Doctor-Patient Relationship Factors (average rating = 3.78). Psychiatric History with two layers had an importance rating of 3.34. Three clusters drawn with one layer were: Emotional Attachment to Pain Medications (2.98), Personal Care & Lifestyle Issues (2.87), and finally, Psychosocial Problems (2.83). Emotional Attachment to Pain Medications included statements regarding how much the person “felt” a need for pain medication, as opposed to behaviors regarding medications, which were included in the more highly rated Medication-Related Behaviors, which tended to focus on actual behaviors vis-avis their medications. Personal Care & Lifestyle Issues tended to focus on such factors as frequent visits to the emergency room, tendency toward involvement in accidents and workers compensation or disability, and included some statements regarding patients’ grooming and cleanliness. Psychosocial problems focused mostly on the quality of patients’ relationship with family and friends, generally with respect to support, dysfunction, marriage problems etc. Finally, it is important to note that the classifications of ratings as “low” or “high” is relative. In most cases, the ratings of the statements were relatively high. The average cluster rating for the lowest rated cluster was higher than the midpoint of the five-point scale (greater than 2.5), suggesting that these raters felt all clusters were relatively important.

Figure 2 presents a ladder graph which compares the importance ratings of the doctoral-level participants and the non-doctoral level participants, which in this group were primary nursing-level staff. This figure shows that the two groups tended to rate the clusters very similarly with respect to importance, with a nearly perfect positive correlation of .99. This suggests that these two groups of providers are tending to see the factors that may be related to predicting which patients will do well or poorly on long-term opioid treatment in a very similar way. Specifically, the ranking of the clusters from highest to lowest was identical for the two groups. While these concepts require empirical validation, it is encouraging to find a high correspondence of views across perspectives.

Figure 2: Pattern Match



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Creation of the SOAPP Version 1.0 Prototype

- An alpha version of the SOAPP version 1.0 was created using the concepts and statements derived during the concept mapping process.
- A 24 item, self report scale was created, where items are rated on a five-point scale (0 to 4).
- At least one item reflected the content of each of the clusters identified in the concept mapping process.

At meetings of the Inflexxion team, patient self-report items were generated for the SOAPP version 1.0 based on the concept mapping results, the literature and our own clinical experience as pain and addictions experts.

Twenty-four items were generated that could be answered by patients on a five-point Likert-like scale from "0" meaning "Never," to "4" meaning "Very Often." A Likert rating scale response format was selected because pilot experience with such items by Jamison and colleagues (Michna et al., 2002) revealed that patients

would acknowledge negative experiences (e.g., illegal drug use) or feelings (e.g., that their families were unsupportive), if they had a way to say that such things happened rarely. Rather than indicating “yes” to such questions, patients wanted to say that they “used to” use drugs or that they “sometimes” felt unsupported by their families. The Likert-like rating gives patients this option, and provides considerably more information than simply a “yes or no”-type rating.

The 24 items were selected so that at least one item reflected the content of each of the categories identified in concept mapping. Therefore, six items address Substance Abuse History, three reflect the Doctor-Patient Relationship, six cover Antisocial Behaviors/History, two cover Medication-Related Behaviors, two cover Personal Care & Lifestyle Issues, two items address Emotional Attachment to Pain Medications, two cover Psychiatric History, and one covers Psychosocial Problems.

An original list of items was reviewed and revised in several iterative rounds by the entire Inflexxion team. The resulting scale, referred to as the Screener and Opioid Assessment for Patients with Pain, was created and readied for administration to patients in an initial trial of item performance.