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Theoretical Explanations for Combining NANDA, NIC, and NOC

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Margaret Lunney

The nursing classifications systems of NANDA, NIC, and NOC are language systems designed to represent three interacting and cyclical elements of nursing care: diagnoses, interventions, and outcomes. The relevance and applicability of each of these systems are enhanced with use of the other two systems. Because the three languages were developed by three different groups, their hierarchical structures of domains and classes differ from one another. Differences in the structures of the three systems make it difficult for users to identify the interrelationships among the three systems. Efforts to develop a common structure for these three systems have practical utility, but theoretical explanations for a new structure are also needed because the usefulness of standardized nursing languages (SNLs) to quality-based nursing care has been challenged (Hagey & McDonough 1984; Leininger 1990; Mitchell 1991; Shamansky & Yanni 1983; Smithbattle & Diekemper 2000, 2001) and the time and effort to initiate these systems should be justified. This chapter explains why theoretical explanations for using SNLs are needed and describes the relevance of three theoretical perspectives: linguistics theory, critical thinking, and accuracy of nurses' diagnoses to discern interventions and outcomes.

Need for Theoretical Explanations

Two of the explanations currently used to support use of SNLs are that they are needed to document diagnoses, interventions, and outcomes in the electronic health record and to increase the visibility of nursing's contributions to health-care events. These explanations are inadequate to sell the idea of NANDA, NIC, and NOC because they are viewed as self-serving for nursing. Nurses and others who reject the idea of standardization, as well as the complexity and cost of implementation, need theoretical explanations for use of standardized nursing languages.

Even though there are many nurse supporters of SNLs such as NANDA, NIC, and NOC, there are also many nurses who criticize their use. The lack of

support can be damaging and may prevent widespread adoption of SNLs. One harmful response is covert; that is, nurse leaders and members of other disciplines in healthcare agencies, education, and research ignore and avoid SNLs. These responses may be based on reluctance to learn what is considered a "fad," lack of funds to buy books and software for learning and teaching about these systems, lack of acceptance that an electronic health record will be mandated, belief that SNLs do not fit with selected theories and research, and assumptions that standardization of terms causes harm to patients and does not represent holistic nursing care.

A few negative responses occasionally surface in nursing journals, which reinforce the negative views of SNLs (Hagey & McDonough 1984; Leininger 1990; Mitchell 1991; Shamansky & Yanni 1983; Smithbattle & Diekemper 2000, 2001). In addition, nurses on computer-based listservs periodically discuss the advantages and disadvantages of SNLs. Nurses who support SNLs generally point out that nursing care needs to be visible in the healthcare system rather than explaining the relevance to quality-based nursing care, while nonsupporters claim that the quality of nursing care is better without standardized nursing languages.

As a result of these objections and criticisms, SNLs are not included in agency-based information systems, not used for documentation of diagnoses, outcomes, and interventions, not included in nursing curricula, and not studied by nurse researchers. Combining NANDA, NIC, and NOC will address some, but not all, of the objections or criticisms of standardized nursing languages. Supporters of NANDA, NIC, and NOC can use theory to explain why development and use of SNLs are essential for the progress and growth of the discipline and how use of SNLs contributes to quality-based nursing care.

Theoretical Explanations for NNN

Three theoretical perspectives show the importance of using standardized nursing languages to achieve positive healthcare outcomes. These are Hayakawa's *linguistics theory* (Hayakawa & Hayakawa 1990), *critical thinking perspectives* (Brookfield 1991; Scheffer & Rubenfeld 2000), and the *concept of accuracy of nurses' diagnoses* (Lunney 2001).

Linguistics Theory

Linguistics theory proposes that languages such as the scientific classifications of NNN are fundamental mechanisms of survival and the most highly developed of symbolic processes (Hayakawa & Hayakawa 1990). Scientific classifications are necessary tools for communication with self and others. Nurses, like other people, think with words, so they need words to think about the phenomena of concern. Nurses may not even discern events for which they have no words or phrases to think.

Communication with self and others enables nurses to combine the strengths and abilities of their neurological systems with that of others, increasing the energy and talents that are available for decision-making and problem

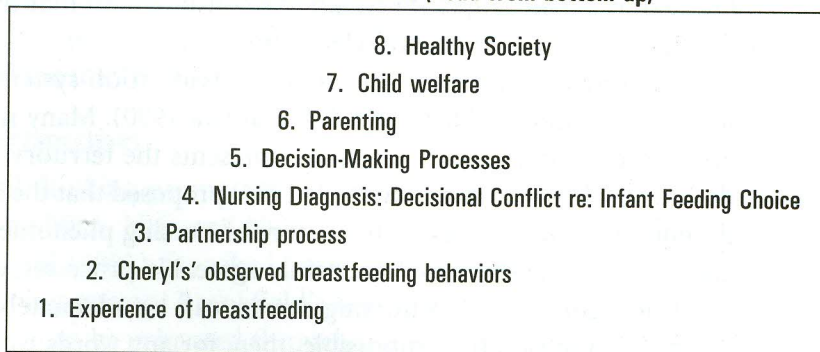
solving. According to Hayakawa and Hayakawa (1990), scientific classifications are tools to improve human experiences. The availability of classification systems enables nurses to work collaboratively with individuals, families, and communities, other nurses, and members of other disciplines. By standardizing the meanings of terms, people can speak more clearly with one another as they work on healthcare issues of concern.

Scientific names are needed because word usage varies by region (Hayakawa & Hayakawa 1990). Even from one unit to another unit in a hospital setting, nurses may be using different terms for the same meanings and the same terms for different meanings. Naming is considered a great step forward because it makes discussion possible.

Linguistics theory tells us that there are no “right” names for anything (Hayakawa & Hayakawa 1990). Yet, some of the stated objections to use of nursing diagnoses relate specifically to the words or phrases that are used; for example, the names are too obtuse (Shamansky & Yanni 1983), do not reflect the nature of nursing (Mitchell 1991), or do not reflect the culture of the patient (Leininger 1990). Linguistics theory reminds us that the existing names of classification systems should be used until better names are proposed and accepted. The names of classification systems evolve over time to meet the needs of the group—that is, the nurses and the consumers whom they serve.

According to linguistics theory, naming is classifying so that every time a name is given to a phenomenon, classification is occurring. This means that, even without standardization of terms, classification occurs. The advantage of standardizing the names of a nursing classification is that nurses can communicate more clearly with healthcare consumers and one another. Standardization enables the sharing of information to explain phenomena. The criticism that nursing diagnoses do not portray the health “process” (Mitchell 1991) is not relevant because naming anything at any time, no matter what the name is, captures only static parts of any process. Hayakawa and Hayakawa (1990) explain the process of a living cow and its complexity, showing that we cannot even capture the essence of a cow with the words we use. Humans automatically abstract from their experiences to identify the similarities among events, not the differences. Figure 3-1 illustrates the various levels of abstractions as they

FIGURE 3 - 1 Abstraction Ladder (Read from bottom up)



Possible Abstractions for a Nursing Case Study on Breastfeeding (Gigliotti & Lunney, 1998).

relate to a nursing event described by Gigliotti and Lunney (1998). Nurses, like other humans, continually abstract from experiences in order to think about them, so it makes no sense to distrust abstractions (Hayakawa & Hayakawa 1990).

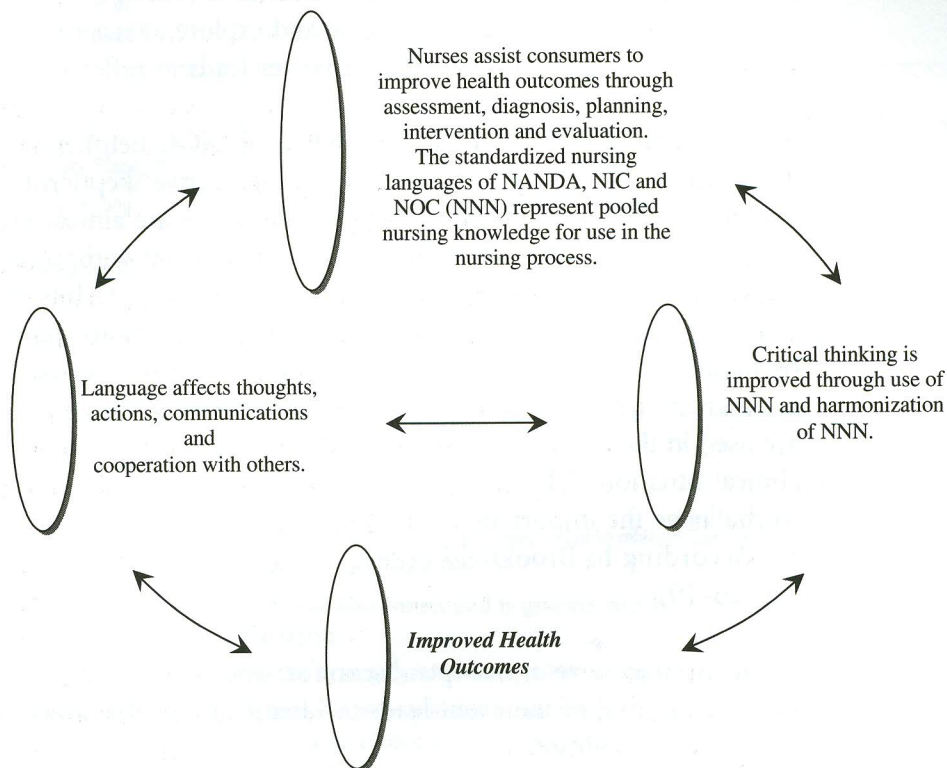
Classifications are developed for specific purposes. For a science such as nursing, classifications represent pooled knowledge and further contribute to the pooling of knowledge (Hayakawa & Hayakawa 1990). The research processes used to develop this pooled knowledge are described in the NIC and NOC books (Johnson, Maas, & Moorhead 2000; McCloskey & Bulechek 2000), and for the NANDA nursing diagnoses (North American Nursing Diagnosis Association 2001) in a wide variety of sources, such as the *International Journal of Nursing Language and Classification* and conference proceedings books.

Pooled nursing knowledge helps nurses to deal with the physical world of nursing. As a complex scientific field, the more knowledge that is available for nurses, the more likely that nurses will be able to find ways to help consumers. Smithbattle and Diekemper (2000, 2001) expressed concern that use of taxonomies and protocols is antithetical to experience in the complex world of nursing. If this were so, it would be an incorrect use of standardized languages. Classifications accomplish their goals only when they are used in conjunction with clinical experiences. The meanings of words are known through context, and context is gained only through experience. Words must always be connected to the events for which they stand. Any nurse who uses SNLs needs to be sure that he or she avoids words describing words and instead connects the words of these classification systems to the real world of nursing. Use of case studies for teaching SNLs is one way to keep the words of NANDA, NIC, and NOC connected to the physical world of nursing.

Connecting standardized languages to the physical world of nursing is important because words always have extensional and intensional meanings (Hayakawa & Hayakawa 1990). Extensional relates to the meanings that exist in the physical world—that is, the meanings of consumers, other nurses, and members of other disciplines. Intensional relates to individual connotations. Individual connotations of every word and phrase are used in relation to healthcare events. An advantage of using the words and phrases of SNLs is that nurses' inferences and decisions are exposed to the scrutiny of others. In contrast, prejudice occurs if nurses focus only on their own connotations and do not share their thoughts with others. The words and phrases of NNN should be used in partnership with healthcare consumers so that the terms that "best fit" the clinical situations are selected for use.

The words and phrases of nursing classification systems are maps to the territory of nursing (Hayakawa & Hayakawa 1990). Many maps are needed to know a territory, and no map fully represents the territory. All maps together do not equal the territory. Mitchell (1991) proposed that the NANDA diagnoses do not adequately represent the nature of nursing phenomena, and Hayakawa and Hayakawa (1990) would certainly agree. No processes, even those that are much less complex than nursing events, can be adequately represented with words and phrases. It is impossible, then, for any words to fully represent any phenomenon.

FIGURE 3-2 Language and Power in the Nursing Process



Science seeks generally useful classifications that produce results. Results in nursing should be quality-based nursing services. The quality of nursing care will be improved through use of SNLs such as NANDA, NIC, and NOC because the availability of pooled nursing knowledge and opportunities for increased communication and cooperation will improve nurses' thinking, which, in turn, will improve nurses' actions on behalf of patients (Figure 3-2).

The goal of classification is to make good maps of the territory of nursing. For NNN, harmonization is the next step in making good maps. Combining NNN will make it easier to use these systems, which, in turn, will increase nurses' experiences of connecting these words and phrases to the real world of nursing. Combining these systems makes it easier to depict the interrelationships among diagnoses, interventions, and outcomes, and reduces the complexity of identifying interventions and outcomes that relate to specific diagnoses.

Critical Thinking Perspectives

Critical thinking perspectives can also be used to explain the importance of using NANDA, NIC, and NOC and the harmonization of these three systems. Brookfield (1991) described critical thinking as an important part of being a developing person. Brookfield's four components and five phases of critical thinking can be enhanced through use of standardized nursing languages. The four components are (pp. 7-9):

1. Identifying and challenging assumptions is central to critical thinking.
2. Challenging the importance of context is crucial to critical thinking.
3. Critical thinkers try to imagine and explore alternatives.
4. Imagining and exploring alternatives leads to reflective skepticism.

Use of the concepts in NANDA, NIC, and NOC helps nurses to challenge assumptions, imagine alternatives, and use reflective skepticism because these systems are much more comprehensive (i.e., there are almost 900 concepts in the three systems) than anything nurses can consider without them. Research has substantiated that human beings can only consider 7 ± 2 bits of data in short-term memory (Newell & Simon 1972) so, without access to comprehensive lists of standard terms, nurses mentally generate short lists of possible diagnoses, interventions, and outcomes from memory. When used correctly, these systems are used in the context of experience and with consideration of the contexts of clinical situations. Thus, use of these systems may also enhance nurses' abilities to challenge the importance of context.

According to Brookfield (1991), the five phases of critical thinking are (pp. 26–29):

1. A trigger event prompts discomfort and perplexity.
2. Appraisal of the event leads to identification of a concern and perusal of possibilities.
3. Exploration of the mind and other resources generates new ways of examining discrepancies and testing answers, concepts, and so forth.
4. Development of alternative explanations helps the person to make sense of the situation.
5. New ways of thinking and acting are integrated into the fabric of the person's life.

The cues in clinical situations trigger nurses' awareness of a need to decide what is the consumer's problem, risk state, or readiness for health promotion. In phase two, identification of a concern is likely to be more accurate with the availability of a large number of concepts. In phase three, examination of the mind and other resources will be more efficient and effective with harmonization of NANDA, NIC, and NOC. Harmonization makes it easier to find and use the related concepts of diagnoses, interventions, and outcomes. In phases four and five, the nurse has many more options to consider with use of the almost 900 concepts in NANDA, NIC, and NOC, as well as consideration of concepts that are not included in NANDA, NIC, and NOC. One of the concerns with use of standardized languages is that nurses will only use concepts within the system and may "force fit" patient situations into existing but inadequate concepts. This would be an incorrect use of these systems. Concepts that are not in these systems should be used as indicated and, if found to be useful, should be submitted to developers of these systems for possible inclusion in one of these systems.

The dimensions of critical thinking in nursing were identified through a Delphi study of 57 nurse experts (Scheffer & Rubenfeld 2000; Table 3-1). A majority of the cognitive skills and habits of mind identified through this study

TABLE 3 - 1 Critical Thinking in Nursing: Definitions of Terms*

| <i>Dimensions of Critical Thinking</i> | <i>Definitions</i> |
|--|---|
| Cognitive Skills | |
| Analyzing | Separating or breaking a whole into parts to discover the nature, function and relationships. |
| Applying Standards | Judging according to established personal, professional, or social rules or criteria. |
| Discriminating | Recognizing differences and similarities among things or situations and distinguishing carefully as to category or rank. |
| Information Seeking | Searching for evidence, facts, or knowledge by identifying relevant sources and gathering objective, subjective, historical, and current data from those sources. |
| Logical Reasoning | Drawing inferences or conclusions that are supported in or justified by evidence. |
| Predicting | Envisioning a plan and its consequences. |
| Transforming Knowledge | Changing or converting the condition, nature, form, or function of concepts among contexts. |
| Habits of the Mind | |
| Confidence | Assurance of one's reasoning abilities. |
| Contextual perspective | Consideration of the whole situation, including relationships, background, and environment, relevant to some happening. |
| Creativity | Intellectual inventiveness used to generate, discover, or restructure ideas; imagining alternatives. |
| Flexibility | Capacity to adapt, accommodate, modify, or change thoughts, ideas and behaviors. |
| Inquisitiveness | An eagerness to know by seeking knowledge and understanding through observation and thoughtful questioning in order to explore possibilities and alternatives. |
| Intellectual integrity | Seeking the truth through sincere, honest processes, even if the results are contrary to one's assumptions and beliefs. |
| Intuition | Insightful sense of knowing without conscious use of reason. |
| Open-mindedness | A viewpoint characterized by being receptive to divergent views and sensitive to one's biases. |
| Perseverance | Pursuit of a course with determination to overcome obstacles. |
| Reflection | Contemplation upon a subject, especially one's assumptions and thinking for purposes of deeper understanding and self-evaluation. |

*Scheffer, B. K., & Rubenfeld, M. G. (2000). A consensus statement on critical thinking. *Journal of Nursing Education, 39*, 352-359.

can be improved through exposure to the pooled knowledge represented in NANDA, NIC, and NOC. Improvement of critical thinking processes will improve the outcomes of thinking, that is, decisions about the elements of nursing care and the actions taken by nurses in response to these decisions.

Six of the seven types of cognitive skill processes may be more efficient and effective with use of the terms from NANDA, NIC, and NOC and with harmonization of the three systems.

1. *Analyzing* the relationships of *patient cues* to inferences/diagnoses and of diagnoses to interventions and outcomes is easier with the availability of these research-based lists of diagnoses, interventions, and outcomes.
2. *Analyzing* the relationships of *diagnoses* to outcomes and interventions will be more efficient when NNN is organized in a common structure.
3. *Discriminating* the meaning of data is supported by the availability of definitions and descriptions with these systems.

4. The processes of *information seeking* as it pertains to diagnoses, outcomes, interventions, and interrelationships are stimulated by the availability of pooled knowledge in NNN.
5. *Applying standards* for quality-based holistic care is facilitated through the identified connections between diagnoses, interventions, and outcomes.
6. Nurses' use of *logical reasoning* for decision-making is more efficient when diagnostic, intervention, and outcome concepts are organized in systematic ways.
7. The processes of *predicting* plans of care and quality-based outcomes of care are broader and more comprehensive with the availability of pooled knowledge in NNN.

Nurses, like all other human beings, think with words, so thinking is facilitated through the availability of words that describe nursing phenomena. The standardization of definitions and descriptions of the meanings of these concepts facilitates communication of thinking processes with others and connection to the thinking of others. Collaboration with others in critical thinking helps nurses to achieve accurate diagnoses of human responses and discernment of the best interventions and outcomes.

Accuracy of Nurses' Diagnoses

An outcome of critical thinking is accuracy of interpreting the cues in clinical situations in order to identify client problems, risk states, or readiness for health promotion. Accuracy of nursing diagnosis is a "rater's judgment of the degree to which a diagnostic statement matches the cues in a client situation" (Lunney 1990). Accuracy in nursing was described as a continuous variable, not a dichotomous one. This is because the phenomena that nurses diagnose are overlapping and are not discretely different from one another. For example, powerlessness is closely related to ineffective coping, problems with tissue integrity are closely related to poor nutritional status, and ineffective breathing pattern is closely related to impaired gas exchange. Thus, some diagnoses may be close to high accuracy, while other diagnoses may be judged as low accuracy. A seven-point scale from high to low accuracy can be used to measure the accuracy of nurses' diagnoses (Lunney 2001). The characteristics of accuracy of nurses' diagnoses are listed in Table 3-2.

Accuracy is particularly important because diagnostic choices guide the selection of interventions and outcomes, whether or not nurses formally use diagnostic concepts from NANDA and other systems. With human limitations regarding short-term memory, nurses continually must infer the meaning of data. Some of these inferences are diagnoses, whether or not they are named as such. Nurses who do not formally use diagnostic languages such as NANDA have an even greater risk of being inaccurate than nurses who use these languages. With formal use of a diagnostic language, nurses have more opportu-

TABLE 3-2 Characteristics of Accuracy of Nurses' Diagnoses*

- Accuracy of a nursing diagnosis is relative to the interactive elements in a client situation.
- The challenge of achieving high levels of accuracy ranges from simple to complex depending on the numbers of cues, types of cues, and characteristics of cues.
- Accuracy includes the use of supporting and conflicting cues.
- High degrees of accuracy of nursing diagnoses are the result of integrating all the obtainable cues to make as precise a statement as possible.
- The stringency of achieving accuracy is relative to the situation.
- Low-accuracy diagnoses reflect one or more of the following characteristics:
 - Use of unreliable or invalid cues
 - Ignorance or misinterpretation of conflicting cues
 - Lack of integration of relevant cues for other diagnoses
 - Evidence that another diagnosis is more likely
 - Lack of agreement with the client or other experts on the phenomenon in question.

*Lunney, M. (1990). Accuracy of nursing diagnosis: Concept development. *Nursing Diagnosis*, 1, 12-17.

nities to reflect on diagnostic choices, and other persons have opportunities to confirm or challenge diagnostic choices.

In a review of research findings pertaining to the accuracy of nurses' diagnoses (Lunney 2001), it was exquisitely clear that low-accuracy interpretations may regularly occur. For example, in a study in which nurses agreed to have the accuracy of their diagnoses judged by two clinical experts (Lunney, Karlik, Kiss, & Murphy 1998, reprinted in Lunney 2001), only 45.2% of the psychosocial diagnoses of 153 newly admitted patients by 62 staff nurses in three hospitals were judged as the two highest levels of accuracy. On the seven-point scale of accuracy, almost 13% of diagnoses of the 153 cases were judged as the three lowest levels of accuracy. In this study, nurses' accuracy was probably higher than usual because they knew they were being judged for accuracy. Low levels of accuracy occur because of the complexity of diagnosing human responses and are probably exacerbated by a lack of attention to accuracy in clinical agencies, nursing education, and nursing research (Lunney 1999, reprinted in Lunney 2001).

Because low accuracy diagnoses logically lead to inappropriate choices of interventions and outcomes, any factor that has potential to improve nurses' accuracy (e.g., use of standardized nursing languages and harmonization of NANDA, NIC and NOC) should be implemented to improve health outcomes.

Discernment of the most appropriate interventions and outcomes is also challenging for nurses considering the complexity of human beings and the comprehensive responsibilities of nurses to help people with health promotion, health protection, and health restoration. Clinical situations differ widely, based on many contextual factors—for example, culture, age, and medical history. The contextual factors that relate to clinical situations affect critical thinking processes and need to be considered when deciding what are the best interventions and outcomes. With so many contextual factors and so many possible interventions and outcomes to consider, discernment of the most appropriate categories will be facilitated by the harmonization of NANDA, NIC, and NOC.

Summary

Linguistics theory explains that naming a scientific phenomenon is important for “knowing” about that phenomenon. The standardized names in NNN are maps to the territory of nursing. These maps are not perfect, but linguistics theory tells us that there are no right names for anything. Supporters of NNN can mitigate criticisms by clarifying that the labels of NNN are *not* nursing—rather, they are only abstractions based on the similarities among events, not the differences—and by explaining the connections of NNN to thinking and actions. Nurses should use the available names in NNN until better ones are created and available for use.

The reality of naming is that names do not fully reflect a phenomenon, even the simplest of events. Yet, names are essential for thinking and subsequent actions. Use of the standardized terms from NNN facilitates improvements in nursing care by fostering collaboration and cooperation among nurses, consumers, and other providers. It is important to connect the names of NNN to the physical world of nursing through case studies.

Critical thinking processes and outcomes are improved with use of NNN and harmonization of NNN. Accuracy of nurses’ diagnoses are important because selection of the most appropriate interventions and outcomes are based on the nurses’ inferences from client data.

Nurses can explain the importance of using NNN and the relevance of combining NNN into one structure through use of linguistics theory, critical thinking perspectives, and the outcomes of critical thinking. These theoretical perspectives can be used to show the relationship of using NNN to quality-based nursing care and as a basis for research studies. Research is needed to provide empirical support for these theoretical perspectives.

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