Perceiving Patients and Their Nonverbal Reactions

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The topic of interest underlying the present study concerns cognitive and conceptual development in adulthood. Specifically, we examined the ways in which professional education affects occupational therapy students’ perceptions and descriptions of patients’ nonverbal behavior. Thirteen subjects viewed three videotapes of patients in treatment and then described the patients’ responses. They viewed the videotapes twice, at the beginning of student training and one and a half years later. Results indicated that at the second viewing, the subjects’ accounts became more differentiated, more complex, and less conclusive. Also on the second viewing, subjects were more likely to corroborate their inferences concerning patients’ emotional reactions with concrete observations, but did not describe patients in common theoretical categories. This result indicates that subjects find it difficult to discuss individual cases in relation to newly acquired theoretical knowledge. We conclude that, rather than increased instruction in theory, students need increased opportunity to analyze individual cases by means of theoretical knowledge.

The purpose of this study was to explore whether occupational therapy students perceive and describe nonverbal cues from patients differently before and after having finished most of their professional education. Thus, this study investigated whether participation in a new social context—in this case an occupational therapy educational program—influenced a specific aspect of cognitive development, how visual nonverbal cues from patients are perceived and interpreted.

An assumption of this study was that cognitive development in adulthood takes place in the social and cultural context in which the person becomes involved (Cole, 1988; Vygotsky, 1986; Wertsch, 1985). It is the person’s appropriation of the forms of thought and modes of understanding the world that are prevalent in the person’s sociocultural and cultural context. This perspective implies that as the person becomes exposed to new and more specialized forms of thinking and handling reality, he or she will adopt forms of reasoning specific to that social context. After having been actively engaged in a new social and cultural context, subjects will perceive certain phenomena that are specific to that context in qualitatively new ways.

An example of research on cognitive development in adulthood is Perry’s (1970) two-decade study of conceptions of knowledge among university students. According to Perry’s observations, students entered institutions of higher learning with the dualistic conception that knowledge was a matter of right or wrong. The teaching they encountered, however, was not compatible with this conception of knowledge. Teachers used a relativistic mode of reasoning, presenting conflicting perspectives on phenomena and opposing sources of evidence. As a consequence of this mismatch between teachers’ and students’ conceptions of knowledge, students changed their conceptions and adopted a more relativistic mode of constructing knowledge that—following Perry’s analysis—has consequences not only for academic activities but also for students’ views on moral and political issues in society in general.

A qualitative approach to the study of cognitive development has been expressed by Marton and Säljö in these terms:

The most important possible change from a cognitive point of view is that, after having pursued a specific course of study and having been active within a certain field, you conceive certain phenomena in a new and different way. What should thus be sought are fundamental differences in the conceptions or different phenomena in the world around us. (1976, p. 13)

This suggests that the ability to distinguish and organize phenomena develops in interaction, and that people’s conceptions of the surrounding world differ depending on their relations to the environment.

Study Rationale

In the present study, we explored cognitive development...
in adulthood as it related to ways of perceiving a specific aspect of reality in health care, that is, how occupational therapy students interpret and construct patients' reactions in a treatment situation. Our interest was limited to how visual nonverbal cues from patients are perceived, interpreted, and described by occupational therapy students at the start of their education and 1 1/2 years later.

For gaining insight into patients' emotional and motivational states, paying attention to their nonverbal signals is important (DiMatteo, 1979; DiMatteo & Taranta, 1979). In direct face-to-face interaction, nonverbal cues complement verbal signals and, when sensitively attended to, they often provide information about patients' reactions that the patients might be unable or unwilling to disclose or that they may even be unaware of. Research has shown that a patient's evaluation of his or her physician's communication style was related to the patient's compliance and satisfaction with health care (Ben-Sira, 1976; Buller & Burgoon, 1987; Burgoon et al., 1987).

According to Mattingly (1990, 1991), the occupational therapist needs to attend to the biomedical aspects of the disability as well as the illness experience. Understanding the experience of living in a disabled body is central to understanding the patient's life-world. Thus, the therapist must interpret observations of the patient's behavior and actions in order to enter the patient's life-world and to establish a collaborative process with the patient (Crepeau, 1991). 'Occupational therapists must form alliances with their patients so that the patients will 'do with' the therapist in order to ultimately become independent and 'do for' themselves' (Mattingly, 1990, p. 1). Crepeau (1991) pointed out that this "doing with" feature is more prominent in occupational therapy than among other health care professionals who more often "do to" or "do on" their patients (p. 1019). This collaborative approach requires that the occupational therapist develop sensitivity to nonverbal cues for treatment to be successful, that is, to engage the patient's active collaboration in treatment. Therefore, we examined whether sensitivity to nonverbal cues develops among occupational therapy students during their professional education.

Method

Subjects

The subjects were 13 occupational therapy students selected at random from two classes in occupational therapy education at the Health University of Linköping in Sweden. All subjects were women and their ages ranged from 20 to 39 years (M = 27.3 years). Subjects individually watched three videotapes on two different occasions, once during the first 2 weeks of their 1 1/2 year occupational therapy program, and once 1 1/2 years later.

At the first viewing, students were regarded as novices, and at the second viewing, having completed a substantial part of their professional education, they were regarded as trained. In the period between the two viewings, the subjects had completed course work in anatomy, physiology, and medicine as well as psychology and psychiatry. In addition, subjects had completed two 6-week periods of clinical practice.

Materials and Procedure

We used three videotapes without soundtracks to gain insight into student reasoning. Each tape was a 1-min edited version of a 30-min treatment session portraying a patient receiving occupational therapy. All three patients had right-sided hemiplegia; two were men, about 75 years old, and one was a 35-year-old woman. In the films, the occupational therapists were shown with their backs to the camera as much as possible or out of view. Thus, the patients were seen in communication with someone out of view but their verbal communication was not available to viewers.

After the patient's case history was explained, subjects were asked to focus on the patient's nonverbal behavior. Subjects were then asked to describe the patient verbally in such a way that the account would help a colleague about to take over that patient's treatment. The descriptions were to be of the patient's reactions rather than the medical aspects of the patient's disability.

After describing the patient, subjects were asked to describe how they would respond to the reactions observed in the patient. These data would be analyzed for a future publication. This procedure was repeated for the remaining two films. Subjects' descriptions were recorded and transcribed; the transcripts provided the database.

Data Analysis

Subjects' accounts were analyzed in three separate steps. First, the length of the accounts was measured by adding the number of words the subject used to describe the patient's reactions. Second, the number of comments on each patient was calculated. A comment was defined as a unit of analysis, part of an utterance that usually contained a subject and a predicate, that provided new information about the patients' reactions or state. In the following illustration, the shifts between comments have been marked with slashes.

I think he was very sad while he was doing the exercise; it was painful too and exhausting to achieve full range of movement in the arm.

According to this analysis, this excerpt contains four comments, each of which adds new meaning. Comments that repeated previous comments were not counted, as they did not add any new information.

The third analysis was of the qualitative differences in accounts. It was performed to explain the different
ways in which subjects said they made sense of what they saw, that is, the different patterns of reasoning they applied to infer emotional reactions from nonverbal behavior.

Inter-rater Reliability

Comments were categorized into three different groups: inferences versus observations, general inferences versus corroborated inferences, and unidimensional versus differentiated comments. To test the reliability of this categorization, the correlation between two co-raters and the author was calculated. Each co-judge categorized 50% of the total descriptions. No instructions were given except those provided under the heading “Data Analysis.” Agreement on the categorizations of the author and those of the two co-raters was 90% and 88% respectively.

Results

Length of Accounts

The total number of words used to describe each patient’s reactions clearly shows that on the second viewing, descriptions were considerably longer than those made on the first viewing (see Table 1). This was true for all subjects (n = 13) and for all three films. The increase in number of words ranged from 20 to 929.

Number of Comments

As might be expected, there was a marked increase of 122.2% (see Table 2) in the number of comments given on the second viewing. Further analysis revealed that comments were of different types. Some comments were observations of the patients’ nonverbal behavior.

She put down her sewing/ immediately you [the occupational therapist] started to talk/ and when you talked she looked at you when she turned her head/ and when the conversation ended/ she picked up her sewing again.

In this excerpt there are six comments on observed behavior.

Another type of comment was the subject’s interpre-

Table 1

Number of Words Subjects Used to Describe Patients’ Nonverbal Reactions on Two Viewings (n = 13)

<table>
<thead>
<tr>
<th>Viewing</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>First viewing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Film 1</td>
<td>95.5</td>
<td>41.8</td>
<td>28–164</td>
</tr>
<tr>
<td>Film 2</td>
<td>130.2</td>
<td>51.9</td>
<td>66–350</td>
</tr>
<tr>
<td>Film 3</td>
<td>68.7</td>
<td>32.4</td>
<td>25–120</td>
</tr>
<tr>
<td>Total</td>
<td>267.5</td>
<td>74.0</td>
<td>154–411</td>
</tr>
<tr>
<td>Second viewing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Film 1</td>
<td>248.3</td>
<td>76.0</td>
<td>119–398</td>
</tr>
<tr>
<td>Film 2</td>
<td>232.4</td>
<td>103.3</td>
<td>94–480</td>
</tr>
<tr>
<td>Film 3</td>
<td>162.4</td>
<td>80.0</td>
<td>76–326</td>
</tr>
<tr>
<td>Total</td>
<td>643.5</td>
<td>227.2</td>
<td>377–1111</td>
</tr>
</tbody>
</table>

Table 2

Number and Types of Comments Described by Subjects on Two Viewings

<table>
<thead>
<tr>
<th>Type of Comment</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First viewing</td>
<td>6.3</td>
<td>3.3</td>
<td>2–13</td>
</tr>
<tr>
<td>Second viewing</td>
<td>18.4</td>
<td>7.6</td>
<td>7–34</td>
</tr>
<tr>
<td>Increase</td>
<td>192%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First viewing</td>
<td>13.7</td>
<td>3.5</td>
<td>6–18</td>
</tr>
<tr>
<td>Second viewing</td>
<td>26.0</td>
<td>9.4</td>
<td>17–46</td>
</tr>
<tr>
<td>Increase</td>
<td>89%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First viewing</td>
<td>18.0</td>
<td>5.1</td>
<td>13–29</td>
</tr>
<tr>
<td>Second viewing</td>
<td>22.2</td>
<td>9.2</td>
<td>29–77</td>
</tr>
<tr>
<td>Increase</td>
<td>122%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

tations of what the patient was feeling and experiencing during treatment. In other words, the subject drew inferences from the nonverbal reactions about the patient’s inner state.

I think she was sad/ despondent somehow/ she appeared to find it very difficult

From the first to the second viewing, observations increased 192% and inferences increased 89% (see Table 2). To understand the significance of these changes, we scrutinized how the subjects made sense of what they saw and what patterns of reasoning they applied.

Qualitative Differences in Accounts

Inferences. The increase in the number of observations and inferences indicates some changes in how subjects justified and supported their impressions of the patients’ reactions. On the second viewing, subjects used a reasoning pattern in which evaluative inferences about patients’ reactions were linked to and corroborated by observations. Consider the following excerpts from two viewings:

First viewing: Perhaps she doesn’t believe in the treatment.

Second viewing: I don’t think she believes in the treatment because she doesn’t use the paralyzed arm at all/ her body posture also shows she is rather relaxed/ she is leaning backward/ as if she wasn’t interested.

This subject described the patient in the same way on both occasions. However, after education, this subject linked her observations to inferences about emotional states. She explicitly referred to the observations that the patient was not using her paralyzed arm and that her body posture signalled passivity to support the inference that the patient did not believe in the treatment. This linkage added coherence to the report and indicated the subject’s concern for making explicit the grounds from which she was drawing her corroborated inferences.

Corroborated inferences. One can further distin-
guish between general inferences and corroborated inferences to characterize this difference between general, unqualified evaluative comments on patients' reactions and an inference corroborated by reference to specific behaviors. The increase in the latter type of statements is evident (see Table 3).

Almost all the accounts that were given on the second occasion contain one or more corroborated inferences; only one subject used general inferences in describing one patient. This implies that the trained subjects were more inclined to ground their inferences about patients' reactions and emotional states by referring to observations. This finding indicates that not only did the trained subjects describe more of patients' reactions and feelings (as evidenced by their more extensive reports), they also made them more coherent and were more explicit in substantiating their inferences regarding emotional reactions by referring to what they had observed.

Differentiated accounts. An interesting finding was that, after education, subjects tended to provide alternative interpretations or nonverbal behavior and of patients' emotional reactions. The accounts became more complex as they shifted from single and general comments to accounts in which several observations and inferences were included. Thus, a unidimensional account implied that the subject decided on a single emotional reaction to characterize the patient and his or her emotional reactions, whereas a differentiated account implied that subjects presented alternative, maybe even conflicting, interpretations or hypotheses regarding the meaning of the patients' nonverbal signals. Consider the following excerpts.

*First viewing:* It was rather difficult for her psychologically.

*Second viewing:* She looks away and only speaks when she is directly questioned/ I think she feels she is in a difficult situation/ she has given up hope/ as if she doesn't know what to do and where to start/ perhaps she doesn't want to talk about it as she doesn’t feel able to cope/ she doesn’t look as if she was happy/ although she laughs/ but perhaps she is embarrassed/ or hesitant.

In this case, the first account was unidimensional, as there is only one comment on emotional reactions (which is also not corroborated in data or theoretical arguments). The second account was considerably more complex with several inferences relating to the patient’s emotional reactions and problems. It began with observations of the patient behavior and then developed into an analysis of several emotional reactions that the patient might have been signaling through her nonverbal behavior.

Not only was the account on the second occasion less simple, it also contains uncertainties about how to interpret the reactions (“perhaps she is embarrassed/ or hesitant”) and gave motives for the patient’s mode of responding (“perhaps she doesn’t want to talk about it”). This increased complexity in the accounts, illustrated by the use of expressions such as “perhaps” and “she doesn’t look as if,” indicates the subjects’ willingness to embrace uncertainty in their interpretations. Thus, exposure to professional education resulted in more explicit interpretive analyses that were more elaborated and complex in character than accounts provided before training.

On the second viewing, six of the 13 subjects used an increased number of differentiated descriptions, two subjects each used one differentiated description, and five subjects remained unchanged (i.e., they presented differentiated descriptions on both occasions) (see Table 3).

An increased tendency to describe a social process in which two people were interacting and responding to each other was also noted in the trained subjects. Trained subjects, to a larger extent, retold a story that had a temporal dimension and in which the actions of agents were constructed as coordinated and dependent. Consider the following excerpt:

*First viewing:* He looked away from his paralyzed arm nearly all the time while he exercised his hand/ he looked very sad/ or on the verge of tears/ and when the occupational therapist made a joke/ he brightened up/ but then the sad look returned.

*Second viewing:* It is painful for him/ when she moves his paralyzed arm/ then he becomes very tense/ he clenches his jaw/ after a while he looks away/ he looks determined to carry on/ and then he swallows/ and blinks his eyes/ which gives the impression it is more painful than he wants to show/ then while they are having a little rest/ he clenches and unclenches his unaffected hand/ as if to exercise it/ so he has probably something of a fighting spirit/ and then he starts on his own accord with the exercises/ and as it is on his own initiative/ he is probably motivated for treatment/ although it is tough for him/ he looks relieved when it is over/ he turns to the occupational therapist and laughs/ he looks relaxed then/ and probably feels satisfied with himself/ that he has managed to complete the exercises.

In this account there is a clear element of describing what happened in interactive terms. The patient’s emotional state was described as having changed from sad to happy and then back to sad as a consequence of the interaction with the occupational therapist and the activity. On the second viewing, this mode of describing the situation was expanded into a detailed story of interactions, responses and emotional reactions.

### Table 3

<table>
<thead>
<tr>
<th>Number and Types of Inferences and Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>Inferences</td>
</tr>
<tr>
<td>General</td>
</tr>
<tr>
<td>Corroborated</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Accounts</td>
</tr>
<tr>
<td>Unidimensional</td>
</tr>
<tr>
<td>Differentiated</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

*Note*: 13 Subjects × 3 films = 39 responses.

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tions of how the patient experienced pain when the occupational therapist was moving his arm in passive movements, how he attempted to control and hide the pain, how he then carried on with the exercises and what his emotional reactions were throughout the film sequence. Thus the dynamic interaction between the patient, his treatment, and relations to staff becomes more evident in accounts given by the subject after training.

Overt and Hidden Reactions

Another interesting aspect in which the accounts of patients differed concerns the extent to which patients' nonverbal signals were assumed to be either overt or hidden reactions. Trained subjects were more prone to see a conflict between the message that people communicate overtly and their true feelings. Thus, they seemed to be more sensitive to whether the patients were involved in impression management (i.e., trying to control the impression they give to the therapist) (Goffman, 1969).

First viewing: She looks a little sad.

Second viewing: She is well groomed, smart, and appears to have a positive outlook; she looks quite happy, but judging by the sad look in her eyes, there is something beneath the surface she doesn't want to show others.

The inference that the patient was sad was drawn by the subject on both viewings. But the observation that the patient also was looking happy, positive, and well cared for, in contrast to the expression in her eyes, led the trained subject to take an additional step in her interpretations of what the patient might be experiencing. The comments involved both the overt behavior, which is the impression the patient was intentionally conveying, and the hidden reaction that was unintentionally leaking via nonverbal behavior. By paying close attention to nonverbal cues, the trained subject became more sensitive to a discrepancy between expressions. This discrepancy indicates a conflict within the patient, which this subject has judged to be important for the continuation of the treatment. The number of descriptions with comments on hidden reactions increased from a mere 2 on all films at the first viewing to 18 on the second viewing.

To summarize, there is a high degree of consistency in the inferences on the two viewings regarding patients' emotional reactions as they were signaled through nonverbal channels. In many cases, even the same words were used to describe the patients' feeling, although the time interval between interviews was 1½ years. An interesting and somewhat unexpected result was the low incidence of medical or psychological terms referring to theoretical knowledge or practical experience. Even though subjects were asked to respond as if to a colleague and even though the interviewer was a teacher of occupational therapy, trained subjects used professional occupational therapy terms a limited number of times.

Between the two viewings accounts differed primarily in complexity and richness. Novices tended to settle for one impression as characteristic of patients and their judgments were more definite. Trained subjects were more inclined to provide a complex description with multiple hypotheses depending on how emotional reactions fluctuate, to notice conflicting and hidden messages in the patient's nonverbal signals, and to describe reactions in interactional terms as consequences of how the patient and therapist related to each other. After occupational therapy education, subjects also corroborated their opinions, mainly by referring to their concrete observations. The accuracy of these observations could be tested by the colleague about to take over the treatment.

Discussion

How occupational therapy students describe and interpret patients' reactions during treatment can be viewed as an illustration of their cognitive change. It is suggested that the developmental changes reported above resulted from the subjects' activity in the new cultural context of participation in occupational therapy education.

After having participated in occupational therapy education, subjects gave longer and more detailed accounts, made more inferences regarding the emotional states of patients, and corroborated to a greater extent their inferences in observations. In addition, trained subjects noticed more hidden reactions and provided more differentiated descriptions in which conflicting messages were observed. Thus, the results revealed that trained subjects seemed to have acquired a greater attentiveness (Gibson, 1966) to what is happening in treatment. The ability to create a clinical image of the patient on the basis of cue acquisition and cue interpretation has been identified as a prominent feature of diagnostic reasoning (Rogers & Holm, 1991).

Metaphorically speaking, the subject was able to see (and retell) more of what was happening (Schön, 1983). In developmental terms, as trained subjects became more open to observing hidden messages and other complications, they also developed a more varied set of hypotheses regarding the patients' emotional reactions.

The findings in this study concerning how trained students developed greater ability to acquire cues and generate hypotheses based on the cues are supported by recent research on clinical reasoning. Trained subjects in this study displayed characteristics similar to those identified by Elstein, Shulman, and Sprafka, (1978) in their study of physicians in clinical reasoning, such as cue identification, cue interpretation, and generation and evaluation of competing hypotheses. A characteristic feature in clinical reasoning common to physicians, medical students, and experienced occupational therapists is the ability to generate competing hypotheses (Elstein et al., 1978; Fleming, 1991a). Experienced occupational ther-

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Trends tended to generate more hypotheses than did new occupational therapists and to consider the interaction of several different aspects, such as patient's personality and social conditions, as well as the medical problem (Fleming, 1991b). New occupational therapists tended to generate fewer hypotheses, to relate patients' problems to medical conditions only, and to seek one hypothesis as the right answer to a complex situation (Fleming, 1991b). Similar tendencies were shown by subjects in this study, that is, the change from unidimensional to differentiated accounts.

The finding that uncertainty about which interpretation or hypothesis to choose increased after education may result from the ability to develop competing hypotheses regarding the nature and cause of patients' emotional reactions. The generation of competing hypotheses based on the same set of cues and reorganization of cues to test and to modify hypotheses has been described by Elstein et al. (1978) in their research on diagnostic problem solving among physicians. The thinking processes used in diagnostic problem solving (Elstein et al., 1978) show similarities to the thinking processes among university students that were identified by Perry (1970). According to Perry's (1970) findings, university students also developed a more diversified and relativistic mode of reasoning and, as their education proceeded, they gradually discarded their tendency to regard knowledge as a matter of either right or wrong. Results in this study show that trained subjects also were more willing to acknowledge that they were uncertain about their interpretations and they appeared more willing to embrace ambiguity.

However, to take measures on situationally appropriate decisions seems to be an important element for reflection on practice, which is integral to development of professional knowledge (Schön, 1991). The essence of reflection on reflection-in-action is hearing or seeing differently, in other words, redefining the problem (Russell & Munby, 1991). Although each patient reacts individually to physical problems, illness, trauma, and disability and thus requires an individualized treatment approach, acquiring professional expertise also involves focusing on the common elements that are important for the understanding of a particular diagnostic group of patients. This implies that professionals develop a framework for classifying individual patients. Such a framework gives professional colleagues theoretical and practical common ground for exchanging important facts in relation to their professional activities. Thus, the occupational therapist needs to have a framework for analyses which transcends that of the layperson.

This study provides little evidence that the subjects, after education, acquired a framework for typifying individual patients. Although all patients had the same diagnosis and symptoms, subjects did not describe them in terms of their similarities. They did not select important points for understanding how patients in that diagnostic group react emotionally to treatment and how they adjust to living with a particular physical disability.

The exploratory nature of our study necessitates caution in the interpretation and generalization of the results. Watching silent films and retelling what is happening is different from acting in therapy. Yet we would argue that some of the observations could serve as a basis for the discussion of education and practice in occupational therapy. If it is the case, as our results suggest, that occupational therapy students may have difficulties in integrating theoretical knowledge with analysis of actual cases, the remedy does not lie in increasing theory but rather in creating opportunities for students to discuss and analyze individual cases by means of their newly acquired theoretical knowledge.

References


