

DURATION EXPERIENCE: A USEFUL THEORETICAL CONSTRUCT FOR NURSING THEORY AND RESEARCH

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INTRODUCTION

Time, as both an external measure developed by man and an internal experience of man, has been of intellectual interest since ancient times. The Egyptians and Greeks both developed elaborate systems of time keeping and wrote extensively about time (Fraser, 1966). The notion that all events take place in time led to the eventual postulation that time was a homogeneous a-priori notion that served as the stage for the action of events (Kant, 1934). This position further developed into an interest in the nature of temporal experience and its relationship to other human activities.

Conceptual structures have been proposed that attempt to explain phenomena with reference to rhythmic patterning (Rogers, 1970). The experience of duration within the context of Rogers' conceptual model for nursing has great promise, and an attempt will be made here to show the relationship between the experience of duration and the Rogerian conceptual framework. To bring these apparently disparate areas together, it is first necessary to discuss some of the ideas proposed by Rogers (1970).

THE ROGERIAN FRAMEWORK

The conceptual framework developed by Rogers (1970) clearly directs that the study of unitary man is the basis for nursing science. Certain basis constructs and relational postulates are presented that serve as a broad context for the development of testable theoretical structures. Among the concepts explored in this model are open systems, man-environment, synergy, unidirectionality, and pattern and organization. The postulates derived from these concepts are Helicy, Resonancy and Complementarity.

The Rogerian system conceptualizes man as an energy field coextensive with the universe. Any attempt to examine man without reference to the environmental field is therefore insufficient and incompatible with this formulation. The pattern of relations within the man-environment system is the means by which nursing studies man. The total configuration of the man-environment field at a given point in time is the logical method of analysis from this perspective. However,

man and his environment are not static entities reacting to one another, but are changing over time through a process of mutual and simultaneous interaction (Rogers, 1970). Thus man is an open system in constant interaction with the environmental field.

In addition to the open systems view of the man-environment field, a developmental process is also identified. The principles mentioned above are the primary vehicle for the exposition of this developmental process. The principle of Helicy states that "the nature of human and environmental change is continuously innovative, probabilistic, and characterized by increasing diversity of human field pattern and organization emerging out of the continuous, mutual, simultaneous interaction between the human and environmental fields and manifesting non-repeating rhythmicities" (Rogers, 1980). Not only is a unidirectional developmental process identified, but a rhythmic component also emerges. Unlike more traditional rhythm frameworks that postulate regularly recurring cycles identical in wave, period, and frequency, this position allows similarities in pattern across time to be identified that are closely associated with unidirectional developmental processes. Such a conceptualization requires the examination of system states over extended periods of time to allow an analysis of these similarities.

The principle of Resonancy states, "The human field and the environmental field are identified by wave pattern and organization manifesting continuous change from lower frequency, longer waves to higher frequency, shorter waves" (Rogers, 1980). This principle brings the rhythmic qualities associated with the developmental process into the middle of the conceptual system by identifying the nature of the developmental process in terms of the evolving rhythmic patterns. Such a postulation reinforces the necessity for measurement of system states over time to examine the various evolutionary patterns of the system's rhythmic structure.

The last principle, Complementarity, describes the developmental process as "the continuous, mutual, simultaneous interaction process between human and environmental fields" (Rogers, 1980). The open systems component of the conceptualization is described here along with a warning against using the static, reductionistic methods of modern science to understand the complex, nonlinear nature of unitary man.

The Rogerian framework identifies parameters of interest for study. System characteristics that exhibit rhythmic qualities are more appropriate for identifying developmental processes than are the more traditional intrapersonal measures that view man as a mechanistic construction reacting to the environment. In order to identify the rela-

tionships between duration experience and the Rogerian framework, it is necessary to discuss some of the work that has been done in relation to time perception.

TIME PERCEPTION

Interest in the study of human time perception has grown steadily since the beginning of the nineteenth century. Early theorists attempted to examine human time experience as a physical entity divorced from contact with reality and environmental events (Woodrow, 1951). As time progressed it became evident that time experience was indeed related to environmental events, but a more mechanistic view of time perception as the differential decay of brain traces proved equally unsatisfactory conceptually (Woodrow, 1951). However, the notion of time perception being likened to physiological processes has never been completely abandoned. Hoagland (1966), performed a series of experiments relating body temperature to time perception and concluded that there was indeed a positive relationship between the two variables that he ascribed to the rate of cellular metabolism. Subsequent attempts to relate time perception to physiologic parameters have failed to demonstrate any consistent relationship, and to date no organ of time perception has been located.

The investigation of time as a mental construction has proved more rewarding than the physiologic view. Ornstein (1975) proposed that time is a mental construction, abstracted from experience, using currently available memory stores as a basis for the construction of the total time experience. This view accounts for many of the divergent findings from the physiological studies as well as serving as a useful theoretical model for further testing. Most of the empirical work done from the Ornstein perspective supports this conceptualization (Polzella, DaPolito & Hinsman, 1977; Schiffman, Bobko & Thompson, 1977; Smith, 1979).

Smith (1979), in a series of studies, has demonstrated the effects of codability and complexity of stimuli on time perception in bed-confined individuals. Her results indicate that the more ambiguous the environmental context, the longer the experience of duration. Although the measure of time used in these experiments relies heavily on the use of clock time, the results essentially agree with a theoretical formulation based on cognitive processing. A further finding in these studies that relates favorably with a rhythm theory perspective, is that patterns of individual judgements could be discerned over time. This suggests that any interpretation solely on the basis of cognitive processing might not be examining the qualitative changes present over several hours time. Although these patterns were not systematically

examined as part of the research design, further analysis might yield fruitful hypotheses about the rhythmic nature of time perception for further study.

Before proceeding with the argument linking time perception with the Rogerian conceptual model, it is necessary to differentiate time perception as a broad construct from duration experience as a more limited, but for present purposes more useful, construct. Traditionally, time has been measured according to some external, culturally defined, standard. While this kind of mechanistic, relative time is useful both for routine daily activities and judgements, it is less useful for examining the individual's experience of time. If time is indeed a mental construction, then it is independent of external units, such as seconds and minutes, and must be studied without relating it to such a mechanistic standard. Duration experience serves as a descriptive construct to denote the study of the individual's personal experience of time passing in contrast to the more mechanistic standards previously discussed. Specifically, then, the task becomes demonstrating how duration experience might serve as an index of unitary man as described by Rogers (1970).

AN INDEX OF UNITARY MAN

Man is in continuous interaction with a constantly changing environmental field. Both man and environment are constantly changing, each influencing the other, to bring about new pattern and organization. Man perceives his environment and interacts with it directly and consciously through his sensory apparatus. Thus, each person constructs an image of reality from both intra and extra individual sources that are interpreted within the central nervous system. One aspect of this construction is time. Most temporal research indicates that changes in both the environmental and human fields interact to allow the individual to place himself in a temporal context (Fraisse, 1963).

In a sense, then, duration serves as an index of man-environment patterning, and indicates the manner in which the rhythmic patterns evolve. Because subjective duration takes into account both intraorganismic and environmental variables, it directly reflects the nature of man-environment patterning. The rhythmic patterns found in the Smith (1979) data, may reflect this relationship between the complexity of the environmental field in interaction with the organismic field over time. Fitzpatrick (1980), using the more global construct of temporal perspective (i.e., past, present and future orientation), also supports the notion of time as an index of the rhythmic nature of unitary man.

In order to be consistent with a Rogerian approach, however, it is necessary to demonstrate the increasing complexity of durational perception over longer developmental periods. From this perspective the interactional nature of duration, as reflective of man-environment interaction, must of necessity become more complex throughout the developmental process. Indeed, such a notion has been proposed by Newman (1979). She postulates that duration is an index of human consciousness. If consciousness is conceptualized as the human construction of man-environment patterning, then subjective duration, as described above, is an index of this patterning. Duration experience in this context can serve as an index of the rhythmic oscillation of man-environment pattern and organization and also provide a useful measure of the system state of the man-environment field at any given point in time. While no study has examined the pattern of relationships of duration over long time periods, some tangential evidence does exist to lend support to the above formulation. Piaget (1946) cites a series of studies that indicate increasing complexity in the interpretation of environmental stimuli relating to time with increasing age. The framework of these studies assumes a similar developmental process for cognitive complexity that parallels this temporal development. While this work is basically from a mechanistic, closed system perspective, it does lend some support to the notion that duration is connected to patterns of man-environment interaction.

Duration experience might also serve as a useful measure of the individual's mental construction of reality over shorter periods of time. The Smith (1979) studies cited earlier provide an excellent example of duration as this type of indicator. It might be postulated that duration estimates taken over short periods of time would show differential patterns of interaction, but have similar variability and less complex patterning than duration estimates taken at points further separated in the developmental process. Furthermore, patterns elicited in conjunction with similar environmental fields would show less variability, especially over short periods, than patterns evoked by markedly different environmental fields.

The above formulation is especially consistent with the Rogerian conceptualization of non-repeating rhythmicities. It is well known that temporal judgements differ over even very short periods of time within the same individual (Fraisse, 1963). No attempt has been made to explore similarities in patterns of duration estimates over a long series of trials for many individuals. This parameter might serve as an index of developmental patterns across individuals useful in a cross-sectional approach to the study of duration.

The above formulation makes a series of connections between subjective duration and a rhythmic open-system perspective. Two points are especially important for consideration in the operationalization of this position. First, patterns of similarity over time are more appropriate as a measurement approach than the more traditional cross-sectional methods employed in many existing disciplines. Rather than asking questions about group differences on one or several measures, questions about the similarity in the configuration of stimuli are more appropriate for examining the behavior of entire systems. Secondly, subjective time must be conceptualized as a universal human experience. The mechanistic, clock-oriented time of highly industrialized societies reflects a learned response to temporal experience that is not necessarily reflective of subjective experience. The more traditional measures of temporal experience, that rely heavily upon familiarity with clock time, are not adequate indicators of the subjective experience of time. These points are important to consider in the development of instruments for measuring the rhythms of duration experience.

NURSING PRACTICE AND RESEARCH

The preceding formulation, while proposing a theoretical system for the consideration of duration experience in a rhythms framework, does not address any of the more practical implications of such a position for nursing practice. Some consideration will now be given to the potential use of this framework in this area. If duration experience reflects the nature of man-environment interaction, then assessment of the patterns of individuals might serve as a useful reflection of the overall functioning of the total man-environment system. This assessment would include data related to the usual patterns of reaction to time for the individual. Does time pass slowly or quickly during a usual day? Has the time since the last meal (or any other situation) seemed long or short? When feeling pressured does time seem to pass more slowly or more quickly? Questions such as these may prove useful in designing interventions, such as altering the environment to control the amount and kind of incoming stimuli, to facilitate a re-patterning of the individual. The same questions could then be used as indices for the evaluation of the effectiveness of the intervention. A more concrete example of this linkage might serve to illustrate the usefulness of this strategy. Clients who have undergone surgery may, in some instances, exhibit an altered pattern of duration perception. Interventions aimed at altering environmental or intraindividual variables, such as the number of interruptions by the staff or the

number of visitors permitted at any one time, to facilitate a re-patterning of duration experience might lead to a more harmonious state of man-environment interaction and facilitate recovery processes. Similarly, alteration of the sensory environment of an individual in a threatening situation (e.g., Intensive Care Unit) by measures such as reducing noise or excessive glare from lights might facilitate mobilization of energy for recovery through altered man-environment patterning.

The directions for the development of research in the area of duration experience, while clear conceptually, present many methodological difficulties. No reliable and valid measure has yet been developed for duration experience. The mathematical structural models for determining similarities in patterns and identifying distinctive features of patterns over long time periods have great potential for use in this regard. Very few explorations have used the currently existing statistical techniques to answer questions posed in the same way as the current formulation. Methods for examining the qualitative characteristics of open-system behavior have not been developed beyond the infancy stage. Decisions about the degree of pattern similarity that can be regarded as falling within the range of acceptable variation have not yet been addressed. These are only a few of the many problems faced by the researcher wanting to ask relevant questions in this area. It is hoped that nursing will contribute substantially to these methodological gaps, and develop valid and reliable measures for answering these questions.

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RÉSUMÉ

L'expérience de la durée: une notion théorique utile à la recherche et à la théorie dans le domaine des sciences infirmières

On a présenté un argument théorique pour utiliser la durée subjective comme indice du modelage homme-milieu dans le système conceptuel Rogérien (1970, 1980). Une courte présentation du système Rogérien a été suivie d'un examen de la littérature sur l'expérience de la durée. Plusieurs arguments, basés sur des recherches pertinentes, ont été présentés à l'appui de l'utilité de la perception de la durée comme indice du système homme-milieu. L'article se termine par une discussion de la pertinence de ce type de formulation pour les sciences infirmières et de plusieurs problèmes d'ordre méthodologique nécessitant certaines explications avant que l'on puisse poursuivre les recherches dans le domaine de la perception de la durée.