Perceived situational control and perceived duration of time: expressions of life patterns

Margaret Newman's model of perceived duration of time as an index to consciousness provided the theoretical framework for the study in which perceived control was tested as a possible factor in conflicting findings regarding perceived duration of time among the elderly. Forty institutionalized aged women were tested to explore the relationship between perceived control, age, and perceived duration of time as calculated into a consciousness index. Perceived duration of time was not found to be significantly related to age or perceived control. Length of institutionalization was positively related to perceived control.

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IT HAS BEEN proposed that health is an expansion of consciousness and that patterns of time, space, and motion are correlates of consciousness.[1-5] Newman postulates that perceived duration of time is an index to consciousness, with increased perceived duration reflecting higher levels of consciousness. When time was studied across the life span, Newman found both an increase in perceived duration of time and higher levels of consciousness among the aged. Other investigators, however, have failed to find evidence supporting the assumption that older adults experience increased perceived duration when compared to younger adults.[6,7] Newman has also investigated depression as a possible factor underlying these conflicting results and has noted a positive relationship between decreased perceived duration and depression among the aged.[3] It is apparent that perceived duration of time is a highly complex phenomenon with multiple dimensions. In an attempt to fur-

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ther examine and explicate Newman's model, this study postulated that perceived control may be another dimension affecting perceived duration in the aged. Lack of control over activities of daily living is common among the aged, especially when they are institutionalized. Therefore, the purpose of the study on which this article is based was to investigate the relationships between perceived duration of time and perceived situational control in an aged population in an attempt to test Newman's model that proposes health as the expansion of consciousness.

THEORETICAL FRAMEWORK

Newman's[1] model of health as the expansion of consciousness defines patterns of time, space, and movement as correlates of developing consciousness. Newman views health as a synthesis of disease and nondisease that is considered an expression of the total pattern of the individual. Postulating that the life process is manifested in new patterns that evolve negentropically toward increasing complexity and organization, Newman states that nursing's goal "is not to make people well, or prevent their getting sick, but to assist people to utilize the power that is within them as they evolve toward higher levels of consciousness."[1(p67)] Within the context of this model, time is proposed as an index to consciousness. Newman used Bentov's[8] conceptualization of perceived duration of time as an index to consciousness and applied the ratio of perceived duration (subjective time) to clock time (objective time). Newman found perceived duration to increase with age in several studies.[1,2,9] An increase in perceived duration is postulated to reflect an altered state of consciousness in which the person experiences more time available than is demonstrated by clock time. As the ability to maintain this expanded sense of time increases, level of consciousness or awareness is postulated to increase. Thus, Newman's findings support the view of the human life process as manifested negentropically toward increasing complexity and organization.

Congruent with Newman's framework, Doob[10] suggests that the study of time provides a clue to the underlying pattern of the individual. Doob considers motivation, anticipation, and intervention to be key variables in temporal behavior: Motivation to survive gives rise to anticipation and intervention. To survive, people must salvage what is useful from the past and anticipate the future. Intervention is based on the belief that gratification is attainable not at present, but in the future. Thus, present behavior is related to past experience or future intervention. Recollection, anticipation, and intervention are postulated to be universal and inevitable aspects of human behavior.

Doob suggests that increasing age is associated with greater accuracy of judgment and a tendency to underestimate short intervals of time. This notion of underestimation of time is consistent with the production method designed to measure increased perceived duration of time. This view is further supported by the work of Cottle,[11] who postulates that time estimation involves both linear and spatial dimensions of "experienced time" and by that of Surwillo,[12] who has also reported a trend toward increased perceived duration among the aged. Conversely, however,

Kuhlen and Monge[13] found no evidence to support the assumption that older adults experience a sense of more rapid time passage than younger adults. Engle[7] also reported no age effect for perceived duration in her investigation into the relationship between movement and time among elderly women. In addition, Fitzpatrick and Donovan[6] and Fitzpatrick[14] reported changes in temporal orientation in relation to perceived control, but age was not found to be related to perceived duration. Newman[3] investigated depression as a possible factor in conflicting studies of perceived duration and noted a positive relationship between depression and decreased perceived duration among the aged. Thus, it is apparent that further research is indicated to further explain this complex human experience.

In relation to Doob's[10] perspective, perceived situational control may also affect motivation, anticipation, and intervention. The literature suggests that uncontrollability decreases motivation and leads to learned helplessness, hopelessness, and depression throughout the life span, but especially among the aged.[15] A sense of control has also been found to be a significant predictor variable affecting morale among the institutionalized aged.[16,17] In addition, Fitzpatrick[5,14] reported that perceived control was related to temporal orientation among the aged. Health locus of control has been studied extensively and postulated to be only one dimension of a multidimensional human phenomenon.[18,19] Seligman[15] also suggests that uncontrollability and learned helplessness lead to depression and death throughout the life span but particularly among the aged. According to Seligman, when the outcome is independent of response, learning decreases, motivation to respond diminishes, and perception of control is distorted. This process, in turn, leads to learned helplessness and extreme external locus of control. In regard to the notion of perceived control, Seligman[15] postulates that if individuals believe that they are controlling an event, even if they are not, anxiety is decreased. Thus, perceived control may be a factor related to the conflicting results regarding perceived duration of time among the aged.

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HYPOTHESIS

Given the constructs of the underlying framework, perceived control may be related to conflicting results concerning perceived duration of time in the aged. Thus, the following hypothesis was deduced: A positive relationship exists between low levels of perceived situational control over daily activities and decreased perceived duration/lower levels of consciousness among institutionalized aged women.

DEFINITION OF TERMS

- Perceived duration of time—experienced time or subjective time: the awareness that an activity has ended, is being experienced, may have to be

cancelled, or can be anticipated.[10] Perceived duration is considered as an index to consciousness, was represented as a ratio of subjective time/objective or clock time, and was measured by the production method.[2]

- Increased perceived duration of time—the objective time to be produced, also called underestimation of time in the production method of measurement. For example, during the production of an interval of 40 seconds, if the subject thinks 40 seconds of clock time have elapsed but according to the clock only 17 seconds have elapsed, the subject manifests increased perceived duration and perceives more time available; ↑ perceived duration = ↑ consciousness index.
- Decreased perceived duration of time—the objective time to be produced; called overestimation of time in the production method of measurement. For example, during the production of an interval of 40 seconds, if the subject thinks 40 seconds of clock time have elapsed but according to the clock 60 seconds have elapsed, the subject manifests decreased perceived duration and perceives that less time is available than is objectively available; ↓ perceived duration = ↓ consciousness index.
- Production method of time measurement—the subject is instructed to tell the researcher when he or she thinks that an interval of 40 seconds has elapsed. While subjects mentally visualize the sweep of the second hand of a clock, the researcher records the number of seconds that have elapsed according to the clock when the subject reports that the 40-second interval has passed. In the production method, the stimulus is symbolized (40 seconds), and the response is experienced.[10]
- Perceived situational control over daily activities (PCDA)—the extent to which an aged person attributes the determination of time, space, and assistance to self or other. This was measured by Chang's Situational Control of Daily Activities (SCDA).[16]

METHOD

A convenience sample of 40 women aged 65 to 96 years (mean age 80.7 years) and living in an extended care facility for at least six months provided the subjects for the study presented here. To be included in the study, subjects were required to be oriented to time, place, and person; to be free of a major disability such as deafness or blindness; and to be able to get out of bed into a wheelchair or chair.

Two long-term care facilities in a medium-sized western city provided the subjects for the study. Following approval of the study by the appropriate human subjects committee, the nursing administrator at each of the institutions provided the researcher with the names of potential subjects who met the criteria for inclusion. Each person was then approached individually by the researcher, was informed regarding the purpose of the study, and voluntarily consented to participate. Written consent was obtained from each subject, who then completed a demographic data sheet that was followed by administration of the semistructured interview schedule of the SCDA.[16] While sitting in a chair,

each subject was then asked to produce a 40-second interval while visualizing the hands of a clock as a measure of perceived duration. All subjects received identical instructions during testing.

Measurement devices used in the study included Chang's semistructured interview schedule of the SCDA[16] and the production method of time estimation.

The SCDA was used to measure perceived situational control. Designed for use in an institutional setting for the aged, the tool measures the extent to which an aged person attributes the control of time, space, or assistance to self or others. A semistructured interview is utilized to determine perceived control over seven activities of daily living (ambulating, dressing, eating, grooming, toileting, socializing, and one-to-one interaction). The SCDA demonstrated a test-retest reliability coefficient of 0.96. In addition, intercoder reliability was 1.0 for the overall category of self or other, and 0.98 coding reliability was established for categorization by activity.[16] The SCDA codes responses into a self-determined or other-determined forced-choice category. Scoring of the SCDA is determined by the number of responses in either the self-determined or other-determined forced-choice category. Scoring of the SCDA is determined by the number of responses in either the self-determined or other-determined category and by the overall majority of responses in either the self-determined or the other-determined category. Thus, scores are obtained for each activity of daily living as well as for an overall measure of perceived situational control.

The production method of time estimation was used as a measure of perceived duration. With this method, subjects are instructed to visualize the second hand of a clock. In response to the investigator's verbal command, "Tell me when 40 seconds is up," the subjects produce an interval that to them represents 40 seconds of time. Actual time elapsed (objective or clock time) was measured by the experimenter using a stopwatch. A consciousness index was then calculated for each subject, using the ratio of subjective time (seconds perceived to represent 40 seconds)/objective time (40 seconds).

RESULTS

The Pearson product-moment correlation coefficient was used to test the hypothesis. A significance level of 0.05 with a one-tailed t test was the standard used for rejection of the null hypothesis. Results for the primary analysis are based on N = 40.

The hypothesis that a positive relationship exists between low levels of perceived situational control over daily activities and decreased perceived duration/lower levels of consciousness among institutionalized women was not supported by the data, $r = 0.22$, p = ns. Rather, subjects who scored higher on the consciousness index (increased perceived duration and more time available) were negatively correlated with self-determined responses, although not at a significant level ($r = -0.2$, $p = 0.1$). In addition, higher consciousness indexes were positively correlated with other-determined responses ($r = 0.22$, $p < 0.10$) at a level approaching significance (see Tables 1 and 2). Thus, the direction of the relationships suggested by the data is reversed from the direction proposed in the hypoth-

Table 1. Perceived duration/consciousness index, perceived situational control, and age

Variable	Cases	Mean	Standard deviation
PD/CI	40	1.97	1.33
PSC—self	40	15.68	3.21
PSC—other	40	5.28	3.15
Age	40	80.73	9.67

esis. Age was also not shown to be significantly related to the consciousness index or to self-determined or other-determined responses. An analysis of variance did, however, demonstrate significant differences between self-determined and other-determined groups according to their length of institutionalization, suggesting that the longer a subject was institutionalized, the more self-determined she became. (Specific results are presented in Tables 3 and 4.)

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The study presented in this article was designed to test a hypothesis deduced from Newman's model of health as the expansion of consciousness. The proposed relationship between perceived situational control and perceived duration/level of consciousness was not supported by the data. In addition, a relationship between age and level of consciousness was not found. However, a relationship that approached significance was identified between higher consciousness indexes and perceived situational control determined by others. In addition, results indicate that subjects who had been institutionalized for longer periods of time perceived themselves as determining control over their daily activities.

Table 2. Correlation coefficients, perceived duration/consciousness index, perceived situational control, and age

	PD/CI
PSC—self	$r = -0.20, p = 0.11$
PSC—other	$r = 0.22, p < 0.10$
Age	$r = 0.05$, ns

The failure of the data to support the hypothesis may reflect a methodological problem rather than a theoretical one. In the present study, the age range was limited to women over 65 years of age rather than to people covering the life span. As a result, this restricted age range may not have provided sufficient variation in patterns under investigation and postulated to change over the life span. As Newman suggests, "Age itself is not an adequate indicator of developmental level."[3(p138)] In addition, the sample in this study does not represent those adults over age 65 who live in their own homes, are still active in their life's work, and are motivated by a need to survive, which may influence their perceived control over their daily activities. Further research into the relationships among perceived situational control, perceived duration/level of consciousness, and age should not limit the population to persons 65 years of age or over. Rather, such research should measure these variables over the life span.

A second methodological consideration must focus on the restricted mobility of the subjects in the present study. The only criterion regarding movement required that subjects be able to get out of bed and into a chair or wheelchair. Since Newman postulates that time is a function of move-

Table 3. Analysis of variance, perceived situational control—self and length of stay

Source	Degrees of freedom	Sum of squares	Mean square	*F*	*p*
Between	4	108.14	27.03	3.21	<0.05
Within	35	294.63	8.42		
Total	39	402.78			

Group	N	Mean	Standard deviation
6-12 mo	10	12.90	3.9
13-24 mo	17	16.47	2.72
25-60 mo	8	16.75	2.05
61-96 mo	3	16.00	1.00
97-180 mo	2	18.00	2.83

ment and that movement and time represent a means by which space and time become reality, it may not be consistent to test a hypothesis deduced from this model with the sample as described in this study. Rather, future research should include movement as a major variable when investigating the proposed relationships between perceived duration/level of consciousness, perceived situational control, and age.

The trend identified, which suggests that increased perceived duration/higher consciousness indexes may be positively related to other-determined perceived situational control, is an interesting finding and may support the constructs of the Newman model. These results may reflect the prior life patterning of this cohort of aged women. Historically, women may not have been encouraged to take active control over many of the events in their lives. Rather, control was the prerogative of fathers or husbands. As such, this group of

Table 4. Analysis of variance, perceived situational control—other and length of stay

Source	Degrees of freedom	Sum of squares	Mean square	*F*	*p*
Between	4	119.38	29.85	3.89	0.01
Within	35	268.59	7.67		
Total	39	387.98			

Group	N	Mean	Standard deviation
6-12 mo	10	8.20	3.74
13-24 mo	17	4.41	2.6
25-60 mo	8	4.13	1.89
61-96 mo	3	5.00	1.00
97-180 mo	2	3.00	2.83

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aged women may not value self-determined perceived control over situations in their lives, an example of which is institutionalized life. In addition, a sense of coherence or control may be enhanced when control is perceived to be in the hands of powerful others who possess legitimate authority. According to Antonovsky,[20] this sense of coherence or control is shaped, tested, reinforced, and modified throughout the life span. Thus, these aged women may in fact be manifesting a pattern that has developed over the course of their lives and that represents their mode of participation in daily experience.

The differences between self- and other-determined groups according to length of institutionalization is another interesting finding. The indication that the longer subjects had been living at the extended care facility the more they manifested greater self-determined perceived situational control may again reflect the notion of prior life patterning. Repeated interactions with the nursing staff over periods of time may facilitate the development of trust and the expectation that individual choice will be respected. In addition, staff are likely to be perceived as powerful others with legitimate authority. Thus, subjects may be more likely to perceive a sense of control over their environment if they feel that control is where it ought to be. Further research might investigate those patterns inherent in longer lengths of institutionalization, which might be related to changes in perceived control among aged persons.

Nurses could use the knowledge generated from such research to help identify and enhance those patterns developed over the life span that are conducive to a sense of coherence or control in the aged. Empowered with such information, nurses could build the perception of control into the lives of people who are vulnerable. In this way, nurses could facilitate the transition to institutionalization, particularly during the first year, through the development of programs that would enhance feelings of control and reduce feelings of anxiety, fear, and hostility that are common among newly institutionalized persons. Building a sense of control into the lives of institutionalized aged persons could be viewed as assisting people "to utilize the power that is within them as they evolve toward higher levels of consciousness."[1(p67)] As such, this goal is consistent with the tenets of the Newman model.

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