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ABSTRACT

A study examined how a stratified nonrandom sample of 112 female retirees cognitively structure their knowledge about retirement. The women, who were selected from two rural communities in two Mid-Atlantic states, were asked to complete brief questionnaires about their background and satisfaction with retirement and to sort 13 cards imprinted with various words or phrases related to retirement into piles that they thought made sense. After creating piles, the subjects were ask to explain the meaning of each pile, state their reasons for placing each card in its given pile, and create a descriptive name for the pile. The verbal discourse generated from subjects in response to the card sort was use in three phases of analysis. No significant relationships were found between structural measures (differentiation and time on task) and demographic characteristics. In general, women with higher differentiation scores produced significantly more piles than did women with lower scores regardless of time spent on sorting. On average, each subject produced 6.17 categories classifiable into the activities dimension. An average of 5.54 income-oriented categories were generated. Health/physical concerns did not appear to be a dominant category. No moral concerns surfaced through the elaborative techniques used. (Contains 60 references.) (MN)

Using the Cognitive Structure of Knowledge of Female Retirees to Assess Speed and Content of Information Processing

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Research into the ways individuals cognitively structure knowledge is receiving more attention as the interest in idiosyncratic approaches to information processing increases. Cognitive structure refers to the kinds, amounts, and interrelationships of bits of domain-specific knowledge (Chi & Koeske, 1983; Gobbo & Chi, 1986; Howard, 1987; Torney-Purta, 1991). Structures are "organizations of conceptually related representations of objects, situations, events, and of sequences of events and actions" (Markus & Zajonc, 1985, p. 143). How individuals cognitively structure various kinds of knowledge has been related to the ways they process information about themselves, the world around them, and in some areas of their social behavior. The bulk of the extant cognitive structural research focuses upon the learning of the sciences. Examples of this include Champagne, Klopfer, Desna, and Squires' (1981) studies into the ways that students' structure of geology knowledge change after instruction; their conceptions of gravity (Gunstone & White, 1981); and the meaning of other physics concepts (Driver, 1983; Hewson & Hewson, 1983; Nussbaum & Novick, 1981; Reif, 1985; White, 1985).

The social and behavioral sciences constitute another area of research on cognitive structure. Those who have studied cognition within politics or political socialization, for example, have focused upon the ways that individuals acquire, organize, and restructure their knowledge about government, politics, and history (e.g., Fiske, Lau, & Smith, 1990; McGraw & Pinney, 1990; Torney-Purta, 1992a; 1992b). Aside from politics and history, social and vocational psychology are other fruitful areas of research. Examples includes the wide variety of ways that cognitive structures relate to changes in an individual's social attitudes (Clary, Tesser, & Downing, 1978; Tesser & Leone, 1977), expectations in social settings (e.g., Eisen & McArthur,

1979) expectations related to sex-role stereotypes (Taylor, Crocker, & D'Agostino, 1978), and behaviors (e.g., self-fulfilling prophecies research by Snyder, Tanke, & Berscheid, 1977; or expert-novice chess players Chi, Feltovich, & Glaser, 1981). Cognitive structures have been related to the ways that individuals interpret, regulate, and anticipate vocational events (Neimeyer, Nevill, Probert, & Fukuyama, 1985) as well as their levels of career self-efficacy (Taylor & Betz, 1983), and the extent of their career maturity (Neimeyer et al., 1985).

Those who conduct research upon cognitive structure commonly examine the content of knowledge and how it is organized or formatted as well as the outcomes or effects of having or not having such organization (Howard, 1987; West, Fensham, & Garrard, 1985). They are often interested in obtaining a better understanding of how the human mind operates, how people learn, what knowledge they possess, and how knowledge develops psychologically (Shuell, 1985). The utility of having insight into how people structure knowledge is that it helps researchers understand how they make decisions and acquire knowledge, as well as how their existing knowledge is changed or restructured.

To date, this research has focused primarily upon populations such as children and young adults. However, no work has been reported in the literature which examines the ways that older adults structure their knowledge about such areas as retirement. Retirement is central here because of the importance that retirement-oriented phenomena will have as the baby boom cohort continues to age and starts to retire en masse. While a sizable amount of survey data about retirement has accumulated over the last 30 years, none of it explores the ways individuals structure their information about retirement. The focus upon females is important because their laborforce participation rates

are increasing and they are remaining in the workforce longer than they have in previous years. While some researchers have suggested that retirement for females is different than for men (Atchley, 1982; Jewson, 1982; Palmore, Burchett, Fillenbaum, George, & Wallman, 1985; Szinovacz, 1982), this work is based upon attitude surveys which seek to identify the correlates, predictors, and consequences of retirement behavior. Research has yet to explore the ways women and men cognitively structure retirement information, whether such knowledge structures exist, or if they can be measured and assessed. To compound the problem of this lack of knowledge, the literature also lacks a consistent definition of retirement; it is unclear just how individuals' construe retirement as compared to social and behavioral scientists, educators, and public policy-makers.

The purpose of the present study was to draw from the literatures of cognitive structural measurement/assessment and retirement to begin to explore how female retirees structure their knowledge of retirement. This study examined two of White's (1979; 1985) proposed dimensions of cognitive structure: variety of topic (used here as cognitive differentiation) and speed of recall. It also drew upon Atchley's four independent dimensions of retirement (1974) as a basis of comparison to help derive meaning from the content of the cognitive structures on retirement. To set the stage for the methodology two brief reviews are presented. The first provides more detail about the functions and dimensions of cognitive structures. The second quickly outlines key retirement-related issues and links the study of cognitive structure to retirement.

Functions of Cognitive Structures

The concept of cognitive structures has been related to or used interchangeably with various terms across the literature; among these include internal structures, prototypes, schemata, and scripts (Markus & Zajonc, 1985); vocational schemata and vocational constructs (Neimeyer, 1988); concepts, knowledge representations, knowledge structures, semantic networks (Howard, 1987), and propositional networks (Anderson, 1980). In spite of their distinctive characteristics, these terms share the same basic information processing functions. For example, cognitive structures or self-schemata about ourselves or our careers serve as personal interpretations of how we view ourselves, or how we view our work. Glaser and Bassok (1989) suggest that, "structured knowledge enables inference capabilities, assists in the elaboration of new information, and enhances retrieval. It provides potential links between stored knowledge and incoming information which facilitates learning and problem solving" (p. 648).

Cognitive structures originate from previous experiences, they help to simplify too much information from a complex environment by breaking it down into manageable categories, they fill in when required information is missing yet needed to make decisions (Markus & Zajonc, 1985). Cognitive structures also help us to derive meaning from multiple social stimuli, by allowing us to form expectations and categories. They allow us to prioritize and make decisions, and they help us to learn by serving as foundations upon which new bits of information (i.e., image, episodic, semantic, or procedural) are structured (Howard, 1987; Rumelhart, 1980). They can allow us to regulate our processing of facts, procedures, and social experiences by filtering out non-salient bits of information (Howard, 1987;

Torney-Purta, 1991).

Dimensions of Cognitive Structure

Much of the work on cognitive structures has been rooted in qualitative research though there are a few notable exceptions [e.g., the quantitative data from repertory grid (repgrid) procedures for provided constructs reported by Brown, 1987; Cochran, 1977; Neimeyer & Leso, 1992 are used to infer extent of cognitive structure]. The use of interview protocols to assess dimensions of cognitive structure (e.g., such as differentiation) are ubiquitous in the literature (e.g., Crockett, Press, Delia, & Kenny, 1974; Gilbert, Watts, & Osborne, 1985; Gobbo & Chi, 1986) and thought to be more reliable than using repgrids (O'Keefe & Sypher, 1981). A very common approach to analyzing structure is to first elicit verbal or written elaborations from subjects through interviews, card sorts, or sentence/story writing. Verbal elaborations are audiotaped and transcribed; the raw data here are the written or spoken words elicited by the subject. This data is then analyzed according to a scoring and/or content analytic technique.

The term "dimensions of structure" refers to qualities or characteristics that can be attributed to this elaborative data. White (1979; 1985) and Gagne and White (1978) have suggested that variety of topic and speed of recall are two such dimensions. The first, variety of topic, refers to the diversity of concepts in a subject's discourse and was employed in this study as a measure of cognitive differentiation. The widely held definition of cognitive differentiation is based upon the notion that bits of information can represent discrete concepts or constructs. A high degree of differentiation indicates one's ability to make more distinctions between bits of information based upon the

availability of such information from long term-memory (Gobbo & Chi, 1986; Neimeyer, 1988; Neimeyer & Metzler, 1987; O'Keefe & Sypher, 1981). Variety of topic is a measure of cognitive differentiation because this dimension supposedly captures the ways that bits of knowledge represent discrete concepts (White, 1979; 1985). Thus, the greater the variety of concepts, the higher the degree of differentiation. Differentiation can be measured by the frequency of different concepts in a subject's discourse as identified by multiple raters.

The second dimension is the speed with which task-related information is able to be recalled from long-term memory. Though White is unique in the way that he labels this as a dimension of cognitive structure, speed of recall is a fairly common measure of cognitive performance in aging and cognition and can be measured by tracking the time it takes to perform a cognitive task (e.g., solving a problem or sorting cards into piles). No one has attempted to investigate Whites's dimensions of structure, beyond suggesting that they may exist. White himself makes no indications that we should expect to see interrelationships between these two particular dimensions. But there is enough research on expert/novices to suggest that we can expect some sort of relationship between speed of recall and differentiation of knowledge. For example, experts have been shown to take longer in the early phases of a problem solving activity, but make up for that time by being correct the first time. This is due to the time they take to think about the problem before they launch into solving it. In effect they solve problems faster overall (Chi, Glaser, & Farr, 1988); their expertise is based upon the amount and kinds of knowledge they possess, but even more so how they use it.

Some criticize research on cognitive structures as being

very complex, abstract (West, et al., 1985; White & Gunstone, 1980), distressing, and even ghostlike (DeSoto & Bosely, 1962). In spite of these perceptions there is a fruitful history of research which has been very successful in operationalizing and analyzing structure. Two of the keys to clarifying the study of cognitive structure is to be clear about what knowledge domain it is that will be studied, and what specific dimension of structure within that domain will be investigated (White, 1979). To provide more insight into the domain of interest, the following section reviews the importance of retirement as an area of study.

Retirement and Females

The impact of retirement of a large cohort of female workers upon the workforce and society in general is being more closely examined now as the quantities of older, retirement-age Americans increase. Harris predicted over a decade ago that the older population would be increasingly female dominant (e.g., they live longer than men), and that women would enter the work force later and remain later than men (Harris, 1978). The prospects are good for the continued increase in laborforce participation rates of women (Johnston & Packer, 1987; Lichter & Costanzo, 1987; Richardson, 1993), many of whom are now remaining in the workforce upon entering it--as opposed to entering, leaving (for child raising), and later reentering (Atchley, 1991).

Definitions of Retirement

There is no precise, universal definition of retirement which can be applied to all individuals, at best there are only characterizations of it. For example, Zopf (1986) suggested that it is "a process that has many forms and effects" (p. 166). Streib and Schneider (1971) referred to retirement in terms of

its being an institutionalized social pattern in any society. Some of the earlier characterizations of retirement are not applicable to the current retiring population. For example Donahue, Orbach, and Pollak (1960) seemed to be accurate when they referred to the everyday use of the word retirement as generally meaning separation from paid employment which has had the character of an occupation or a career over a period of time. Yet their view that the retiree moves from "the position of an economically active person (while engaged in the workforce) to the position of an economically non-active person" is probably an inaccurate characterization of the retirees of the 1990's (Donahue, et al., 1960, p. 331). They also suggested that research can be confounded when subjects use self-definitions for developing their own criteria for what retirement means. Richardson (1993) has recently criticized the definitions of retirement as being too simplistic and not accounting for women.

Robert Atchley has developed one of the more useful ways to understand retirement from several perspectives. He defined retirement as the withdrawal of workers from the workforce and their entitlement to an income based on previous employment (1991). This withdrawal can be viewed as a process, event, social role, and/or a phase of life. Atchley, like those who conceptualize it as a single event as well as a culmination of social processes, probably offers one of the best characterizations of retirement in the literature. But even this view is limited because in some cases retirement may not be a single event, and in other cases it might not relate at all to social processes (as in the case of early retirement due to unexpected health problems).

Atchley's contributions to understanding retirement extend beyond its definition, focusing also upon the its processes. He

suggests retirement is made up of a series of decisions (e.g., his model of the factors for the decision to retire: Atchley, 1979; 1991) and phases or stages (Atchley, 1991; Santrock, 1989). The area of Atchley's work which is pertinent to this study concerns his four independent dimensions of retirement. Based on factor analyses of data from large-scale attitude surveys he concluded that individuals tended to have attitudes and beliefs about retirement that fell into one of four discrete categories: activity, physical capacity, emotional evaluation of being retired, and moral evaluation for being retired (Atchley, 1974; 1982; 1991). The dimension of activity is concerned with what one thinks about the activities that will be engaged while being retired. Physical capacity concerns attitudes about health, fitness, and physical ability. Emotional evaluation concerns the types of feelings that one has about being retired. And moral evaluation for being retired concerns attitudes about the appropriateness of being retired (e.g., those who think they have earned the right to retire after many years of hard work versus those who think that retirees are bucking the system). The chief utility of Atchley's approaches are that they provide a framework of "concepts that can be used to organize ideas about the issues people face in taking up, playing, and relinquishing the retirement role" (Atchley, 1991, p. 210).

Given the variety of definitions and approaches in the study of retirement, it might seem that the task of trying to find a precise and universal definition from the literature is beyond reach. Yet several common notions run across the publications on retirement; these commonalities serve as a starting point in the current investigation on cognitive structures. First, retirement can be thought of as an event, social institution, role, or series of stages that individuals engage in at some point near

the end of one or more careers, though not necessarily near the end of their lives.

Secondly, the retirement variables that are selected for study are usually functions of the perspective of the researcher. For example, labor economists may discuss retirement in terms of labor statistics and cost-benefit models; sociologists will often discuss it in terms of roles and institutions; and psychologists may view it in terms of ontology, qualitative stages, and self-processes. Income and health are the two major factors associated with predictors of retirement. Once these two variables are controlled, it is often the case that other factors start to come into play. This implies that no matter how and when one personally conceptualizes retirement, issues of personal health and income will probably play a central role at some--possibly unexpected--point (e.g., as in early retirement due to poor health or corporate downsizing).

Lastly, people tend to define it for themselves, these self-definitions may or may not be compatible with those perspectives suggested by researchers, educators, employers, or the government. This implies that no matter how others in official capacities define it, an individual will possess their own conceptualization of retirement. It is possible that individuals' conceptualizations of retirement may actually be far less complex than those offered by researchers and policy planners. Little is known about the nature of these conceptualizations, but one approach towards exploring them is to assess the cognitive structuring of retirement knowledge much the same way as has been done in many other areas of psychology. From understanding the cognitive structure of retirement knowledge for specific groups such as females, it might then be possible to work towards a more fine-tuned definition of it.

To begin this process three hypotheses were tested. The first concerned the ways that White's two structural dimensions relate to each other. It was expected that differentiation (viz., variety of topic) would relate to speed of recall. Secondly, these two dimensions would relate to the ability to organize retirement-related information (e.g., through a cognitive production task). Lastly, it was hypothesized that the meanings associated with concepts of retirement would be representative of Atchley's four independent dimensions of retirement.

Methods

Sample

A stratified, non-random sample of female retirees (N=112) from two rural communities in two Mid-Atlantic states were recruited through senior citizen centers and a college senior citizen program according to the following criteria. All had to consider themselves to be retired and they must have retired within the last 36 months from a white collar profession. In the present sample, all were retired from either teaching (45%) private (15%) or public sector lower-level management (20%), or business ownership (20%). Sixty percent had four year college degrees. Mean age at time of retirement was 63.4; mean current age was 64.2. Most subjects were regularly in the senior centers for volunteer work, caring for older friends, or transporting spouses, while others visited the centers to enjoy the facilities and the community. Those on campus were taking part-time classes.

Information about income from careers and pension plans was self-reported. While engaged in their careers, mean individual income was $28,500, mean household income was $66,500 during the

last year of full-time work. All subjects' current income was based upon their own pensions/retirement funding and income from spouses (some of whom were also retired). Mean incomes for those with working spouses was $46,300, and $35,400 when both were retired. No information about savings and other assets was collected. All were either married or widowed (3%). The racial population group breakdown was Whites: 85%, Blacks: 12%, and Asian: 3%.

Procedures

Prior to data collection ten retired females (outside the sample) at one of the senior centers were individually asked to generate verbal lists of as many retirement-oriented ideas as they could think of (i.e., "Tell me all of the things that come into your mind when you think about retirement in general, and not necessarily your own retirement"). Responses were audio taperecorded, transcribed, and coded. This yielded 13 discrete categories which were then used as the basis of subsequent data collection. The categories derived from analysis of 10 female retirees included:

1. Cost of living
2. Past and future income
3. Insurance
4. Get more education
5. Travel
6. Activities
7. Time with family and friends
8. Health
9. Security
10. Life satisfaction
11. More free time

12. No more work concerns

13. Sleep later

Subjects in the main study were told that they were participating in a research project to understand how people think about the world of retirement. Each was seated in a private setting and asked to complete a brief questionnaire and a card sort. The whole process took about 45 minutes.

Questionnaire. Information about a variety of background factors was gathered: marital status, self-reported income(s) (annual dollar amount), self-perceived health status (e.g., excellent, good, fair, poor, very poor), satisfaction with retirement, reasons for being at the centers/campus, marital status, education, and type of former occupation.

Card sort. Subjects were given a deck of 13 index-sized cards each imprinted with one of the 13 categories. The card sort was comprised of five steps. First, they were asked to (1) shuffle the deck and sort through each card explaining what each meant to them. Next, after talking about all 13 cards they were asked to (2) think to themselves about how the cards were similar and/or different from each other and then place each into piles that they thought made sense. Time was kept starting at the moment subjects began to sort through the cards to make their piles. After creating piles subjects were asked to (3) explain what each pile meant; (4) explain why each card was in that pile; and (5) create a descriptive name for each pile. When each was finished talking about the name for the last pile, the ending time was recorded. Verbal elaborations in steps 1, 3, 4, and 5 were audio tape-recorded for later transcription and coding. The card sort yielded three measures: the frequency of piles, time-on-task, and cognitive differentiation.

Prompts and instructions. Prompts were used when subjects

were having difficulty responding, or when they took much time to respond. It was believed that the use of more prompts might lead to greater cognitive production in some subjects--as opposed to less production by those receiving fewer prompts or none at all. To attempt to control this, all subjects were always given at least one prompt (whether needed or not), but no more than three prompts for each pile created during each of the last three steps sections of the card sort procedure. In addition to this, the instructions given to each subject for each part of the data collection were read verbatim by the researcher.

Coding Procedures

The verbal discourse generated from subjects provided the data for three phases of analyses. The first consisted of a parsing procedure to identify segments of sentences that represented different categories to be used to create cards for the sort. This was followed by the identification of individual concepts (as opposed to categories) from the elaborative data of the main sample. The third phase was a much larger parsing procedure upon the elaborations about the card piles. The differences between "concepts" and "categories" are important and are reviewed by Anglin (1977) and Howard (1987, pp. 1-39). For the purposes of clarity in the present study the terms category and theme are used interchangeably, but are viewed as being distinct from concepts. For example, individuals may arrange concepts by mentally placing them into or out of a category. A category in this sense could be a grouping of related concepts. When we then attempt to describe the meaning of the category or a series of categories we refer to the theme they represent. In this sense, thematic content analysis is nothing more than the systematic identification of categories.

Phase one. Duplicate copies of verbatim transcriptions from the brief free-recall exercise used with the first ten retirees were coded separately by two raters (viz., the researcher and a graduate student familiar with content analysis). The procedure for the coding was modeled after Krippendorf's (1980) method for thematic content analysis. Raters read through each sentence (or sentence fragment) in the transcriptions and drew slash marks between words in the sentence to indicate when the theme or category changed. This resulted in many segments of words. A descriptive label was handwritten above each segment indicating what the category was for that particular group of words. In some cases, within a single sentence, subjects would change categories and then return back to one previously mentioned. The frequency of each type of category was tallied; 13 discreet themes emerged. These were then printed upon cards for the sorting procedure.

Phase two. Coding the much longer transcriptions from the main sample was concerned with concepts not categories. This was based upon Howard's rationale that words are labels or symbols for concepts and that multiple concepts can be joined together to form larger structures such as categories (Howard, 1987). It was also based upon White's suggested technique for identifying the variety of topics in elaborative data. The raters were the researcher and another assistant. Training for the assistant consisted of reading a definition of concepts provided by the researcher, practice in identifying concepts from copies of the ten earlier transcriptions, and practice in comparing results to establish a measure of interrater agreement. The definition for concepts was synthesized from Howard's (1987) definition of concepts and his review of theories of knowledge representation:

A concept is a mental representation of a stimuli which a

> person can place into or out of a category. We cannot see concepts, yet we know they exist by the words we speak or write. Each time a person generates a word, or group of words, we can therefore infer that some mental process has occurred which allowed the person to first have a mental image of something, and secondly link that image to a word which is then communicated. One word may represent a concept, but it may be possible to have several words referring to a single concept. In a sentence there may be multiple concepts which can be identified. The combined effect of the organization of these concepts is how we attribute meaning to what someone says or writes.

Raters separately read through transcriptions and underlined words which represented concepts. Then together they reviewed all potential concepts and resolved disagreements through discussion. Interrater agreement for the identification of concepts was 93 percent. Manual tallies of each subjects' concepts were computed separately and jointly to assure accuracy.

Concepts used more than once in a sentence or fragment were only counted once, based upon the rationale that when used in a single sentence or sentence fragment, the same word probably represented the same concept. However, when used again in other areas of discourse (i.e., in the contexts of different sentences in different discussions) they were counted again because it was impossible to be certain that they represented entirely different concepts in those instances. Direct mention of any one of the 13 categories from the cards were not included in the concept tally because these were already provided by the researcher. Cognitive differentiation was measured by the frequency of concepts. Concepts which were not agreed upon were not included in any analyses.

Phase three. Data from the elaborations were then re-

analyzed to identify categories in order to classify them according to Atchley's four superordinate dimensions. Steps 3 through 5 of the transcriptions which concerned explaining what piles meant, why each card was in each pile, and naming the piles were analyzed according to the same protocols specified in Phase One. Each rater assigned the labeled segments into one of Atchley's four dimensions or into a new dimension. For example, in one subject's transcription there were several sentences in a row that contained categories relating to activities. All of these were classified according to Atchley's dimension for activity. For that same subject, however, another segment could not be classified according to any of Atchley's dimensions.

The goals for establishing interrater agreement in this phase were twofold. First agreement upon the identification of category segments had to be established, then the raters had to agree upon the ways these categories could be classified into Atchley's four dimensions. Interrater agreement levels were 92 and 98 percent respectively. Word segments that were not jointly identified as representing categories were not included in the analyses. When no agreement was reached as to how a particular category should be classified according to Atchley's four it was classified as Other.

Results

There were no significant relationships between the structural measures [viz., differentiation score (Differentiation), time-on-task (Time)] and any of the demographic measures. Most of the subjects indicated that their health was fair-to-good regardless of age, and most reported high levels of satisfaction with their retirement.

Interrelationship Between Structural Dimensions

Preliminary analysis revealed bi-modal distributions for both Time and Differentiation. The means for each variable were tested for homogeneity of distribution[1] and were found to be significant [(Time: $z=1.51$, $p=.02$) (Differentiation: $z=2.65$, $p\leq.000$)]. It was concluded that the distributions for the two variables were not homogeneous. Split medians were then computed for Time and Differentiation and used to classify subjects into four exhaustive groups: those high on Time and Differentiation, those low on both, and two groups with combinations of high and low. The means and standard deviations for these groups are presented in Table 1.

Insert Table 1 about here

Structural Dimensions and Pile Production

Analysis of variance was used to explore the ways that Differentiation (high or low) and Time (more or less) related to ability to produce piles. The mean for piles produced was 3.78. There was a significant main effect for piles by level of Differentiation, $F(1,108)=44.29$, $p\leq.000$. There was no effect for time and the two did not interact. Figure 1 presents the mean piles produced for the four groups. Those taking less Time who also had low Differentiation scores (n=48) produced the fewest piles. There was another group who also took less time but they had higher Differentiation (n=33) and produced more piles. The group taking more Time, but who had low Differentiation scores (n=11) produced the second smallest amount of piles. The fourth

[1] Kolmogorov-Smirnov one-sample z tests.

group also took more time but they had higher Differentiation (n=20) and produced the most piles. In general those with higher Differentiation scores produced significantly more piles ($t(110)=7.08$, $p \leq .000$) than those with lower scores regardless of Time.

Insert Figure 1 about here

Dimensions of Retirement

As subjects elaborated about the creation of their piles they provided many instances of retirement-related themes. Some focused upon the task of talking about their piles, while others went off on tangents. For example one subject explained why she had made a "money-worry" pile. She indicated that she had not planned far in advance for her retirement and that she had an inadequate pension plan, though she did have a few investments, her husband's income, and some of the equipment from her small sewing business that had not been sold. She was also planning to collect social security, but had not done so yet, this was all dependent upon whether they move closer to the children. In this example there are five categories which comprise the dimension of income, and one category about children which was linked almost as an afterthought.

Three of Atchley's dimensions arose from the content analysis of these transcriptions: activities, emotional, and to a lessor degree physical/health-oriented categories. Income was the second most common category though this was not one of Atchley's. No referents to moral evaluation appeared in the development of the 13 sort cards or the content analysis of the pile elaborations. The cumulative frequencies of categories

which were characterized to one dimension or the other are presented in Table 2. The activities dimension comprised the largest amount of categories with 691 categories across all subjects. On the average each subject produced 6.17 categories which were classifiable into this dimension. Examples of these categories included: "travel around the world, see the USA, get out of the house more, do yard work, get to see friend, engage in hobbies, get another job, go back to school, and plan for my next career."

There were slightly fewer income-oriented categories, with subjects generating an average of 5.54 these. Examples include those previously mentioned as well as: "money from my part-time job, spending more of my money on friends now, monitor my investments, and make sure my husband doesn't spend it all."

Insert Table 2 about here

In some cases it was difficult to determine the dimension classification for categories because they were often mentioned closely together. For example, one subject commented that now that she is retired she tries to do more work outside, such as gardening, and would like to start walking more, as long as her back is not bothering her. This example suggests that activities and health are the two dimensions here.

Some elaborations contained discourse that was not readily classifiable according to Atchley's four without deliberately using prompts, but the amount of prompts used was limited as mentioned earlier. There were relatively few of them (2.8 %) and they did not share any common categories. For example while explaining her piles of cards, one former small business owner

indicated:

Subject: "I wanted away from the office nonsense."
Interviewer: "What do you mean by nonsense?"
Subject: "Too many stupid people out there."
Interviewer: "Stupid?"
Subject: "Yes, just so many in my office."
Interviewer: "Can you tell me something about them?"
Subject: "Mostly the younger people."

Using this method for of data collection it was assumed that the more prompts used (i.e., probing questions) the greater the chance of leading the subject towards a particular sort of response. It might have been possible to get to the exact reason as to why the subject above made these comments but at this juncture, three prompts had already been used.

Discussion

The present study explored how retired females cognitively structure their knowledge about retirement. The protocols used here for eliciting and analyzing data were based upon White's method for using variety of topic and speed of recall as measures of cognitive structure. The theoretical underpinnings for this approach assume that by identifying concepts and categories from elaborative data we can gain deeper understanding into the structure of knowledge and what that structure means. None have attempted to investigate Whites's dimensions of structure, beyond suggesting that they may exist. The results presented here are unique in that they suggest that White's dimensions of information processing speed and variety of topic (differentiation) are not related; the first hypothesis was not supported. In addition, the second hypothesis was only partially

supported, to the extent that the level of cognitive differentiation, but not time-on-task, was useful in explaining subjects' abilities to produce piles.

These two findings may suggest that when thinking about retirement female retirees use different cognitive styles to solve problems (in this case create piles from 13 cards). For example, some used slower methods resulting in the production of more piles, while others produced similar amounts of piles but did so faster. The diversity shown in this sample supports the increasing body of gerontological research suggesting that there is great heterogeneity among the aging. Furthermore, whereas some research has suggested that slow reaction time or processing speed is an ontologic marker of decreased cognitive capacities, the fact that some retirees took longer to produce piles cannot be viewed as a deficit because many of them were still able to produce more piles.

It is also possible that the nature of the tasks (i.e., thinking about retirement and sorting cards) was not complex enough to allow any processing speed-related differences to manifest. Had these appeared, then the relationship between cognitive differentiation and speed of recall might have been different.

The impending retirement of the baby boom generation and the increasing laborforce participation of females suggest that women constitute a "societally significant" phenomenon (Szinovacz, 1987). The focus upon females here was for this reason; also the inclusion of former white collar workers was to allow for more direct comparisons to the extensive body of retirement research with males from those professions. The findings here suggest that these female retirees only conceptualized retirement according to three of Atchley's four dimensions, thus only

partially supporting the third hypothesis. Piles relating to income were abundant whereas referents to a moral evaluation about retirement did not appear. Had they been identified, we might expect to see moral evaluations such as: should retire to make way for new workers, it is a right after having worked so many years, or retirees are burdens to the rest of the working population. This suggests that there may be a shift away from moral-based evaluations towards other considerations such as income. It is also possible that moral evaluations about retirement were deeply embedded within the dimensions reported here but that the present technique for eliciting and analyzing data could not tease them out.

Health or physical concerns did not appear to be a dominant category. It is possible that the nature of the sample selection introduced a bias towards those retirees who were very active, younger, wealthier, and healthier. In commenting on the difficulties associated with selecting random samples of retired women, Jewson (1982) suggested that while there are increasing amounts of professional women entering retirement, the numbers are still small. Over a decade later this was still a concern--at least in terms of identifying adequate numbers of retired female white collar workers for the design. The non-randomness and the demographics of the sample in the present study should be taken into consideration when generalizing the results. The range of ages in the present sample may also limit the generalizability. Seigler (1980) has suggested that decrements in cognitive functioning (e.g., processing speed) usually begin to occur in the 70's. It is possible that with an older sample, different results with White's cognitive and Atchley's retirement dimensions would have been found.

A beginning towards an understanding of the ways female

retirees structure knowledge about the world of retirement has been presented. It is very often the case that research on cognitive structures yields insights at two very different levels. First, the study of cognitive structures can promote a better understanding of measurement and assessment techniques many of which are deeply rooted in theory (e.g., measurement of concepts and categories are rooted in theories of knowledge representation; reptests and repgrids are rooted in personal construct theory). There is no consensus as to which if any approach to studying cognitive structures is more reliable; most serve as tests of their respective theories.

The second type of insight goes beyond psychometrics by providing a deeper understanding into the meaning and contexts behind the data. This understanding is often comprised of combinations of quantitative and qualitative outcomes as was the case in the present study. In terms of quantity it was found that greater differentiated knowledge was not necessarily related to speed of recall for simple tasks, but that it did relate to the ability to distinguish more between retirement-oriented stimuli. Based upon these findings, White's dimension of variety of topic (viz., cognitive differentiation) appeared to be more useful in understanding the nature of cognitive structure. Future research should examine White's other dimensions and attempt to relate them to retirement cognitions using more complex production tasks.

In terms of quality, it was found that the content of knowledge about retirement had a slightly different meaning than previous research suggests. In the search for a more precise and universal definition of retirement, the present study offers the notion that retirement conceptualizations for some female retirees can be categorized as being activities, income,

emotional, and health-oriented. Moral concerns did not seem to surface through the elaborative techniques used.

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Table 1

Means and Standard Deviations for Scores on Two Structural Dimensions by Split Median Groupings

		Structural Dimension			
		Differentiation		Time-on-Task	
Groups	N	M	SD	M	SD
Low Diff/Less Time	48	23.19_a	6.59	23.52_a	2.01
Low Diff/More Time	11	26.82_a	5.90	31.00_b	2.72
High Diff/Less Time	33	44.18_b	5.80	22.70_a	2.05
High Diff/More Time	20	$52.90_{a,b}$	6.37	32.15_b	2.56
Overall	112	35.04	13.71	25.55	4.44

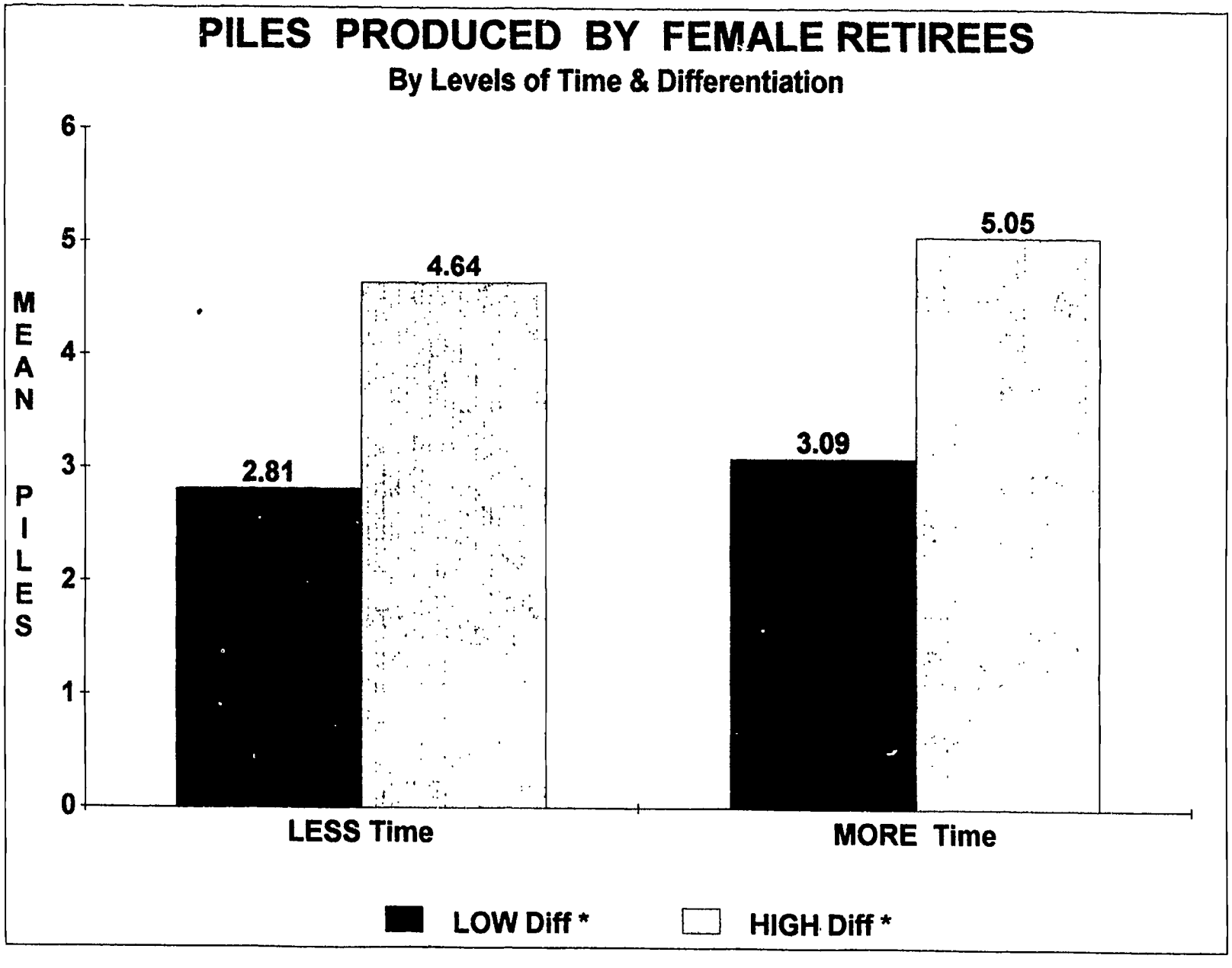
Note. Differentiation (Diff) measured by the frequency of concepts produced across all tasks; Time in minutes to perform steps 3-5 of the card sort. Within each dimension, means with different subscripts are significantly different from each other at the .05 level.

Table 2

Frequencies and Percentages of Categories Classified Into Retirement Dimensions

Retirement Dimension	Frequency	%
Activities	691	31.8
Income	620	28.5
Emotional	583	26.8
Health	220	10.1
Other	60	2.8
Total	2174	100.0

FIG. 1



* Signif. different from each other at .000 Time: Time-on-task Diff: Differentiation (N=112)