The Elderly's Comprehension of Information Regarding Commonly Prescribed Drugs[1)]

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The study reported here is part of a larger research project in which we are examining the relationships between older adults' cognitive abilities and their performance on tasks of practical intelligence. Over the last few years, the term "practical intelligence" has gained more and more popularity among researchers in different areas of cognitive psychology (see Sternberg & Wagner, 1986). However, there does not exist a commonly agreed upon definition of what this term really refers to. In the same vein, there are very different approaches to the assessment of practical intelligence and unanimously accepted measures for the assessment of practical intelligence do not exist.

The smallest common denominator among investigators focusing on practical intelligence is their concern with intelligent behaviors in non-academic contexts. Thus, individuals' performance in real-life or everyday contexts becomes the focus of interest. Since real-life contexts are by definition intricate and infinitely diverse, a major task in practical intelligence research consists of the identification and specification of criterion tasks which are good markers of intelligent performance in relevant life domains.

For our research with older adults, we have adopted a rather pragmatic approach. We have chosen the instrumental activities of daily living as a possible starting point for identifying the most salient tasks that older adults need to deal with competently on a day-to-day basis (see Lawton, 1971; Lawton & Brody, 1969). Among the instrumental activities of daily living,

responsibility for taking medications properly is an important everyday task for a majority of older adults. This was one reason why we focused in our initial research on prescription drug labels as stimulus materials.

A second reason was that we wanted to restrict our research to a certain type of stimulus materials. Specifically, we wanted to assess older adults' comprehension of structured, printed information that is integral to a prototypical task of daily living. Previous research by Willis and Schaie (1986) has indicated that older adults have difficulty comprehending and interpreting structured information in the form of labels, forms, charts, and schedules that they encounter in everyday contexts.

A third reason why we focused on the prescription drug label as a prototypical task has to do with the fact that most older adults take one or more medications and the prescription drug label is probably the single most important piece of written information that the patients receive. The prescription signature, as the label is sometimes called, contains the basic information required for adherence to the medication regimen, and patient compliance is typically assessed in terms of the label instructions. Previous research (Wartman, Morlock, & Maltix, 1983) indicates that compliance is positively related to level of medication information. In a recent review article, Fincham (1988) ranked the patient's lack of knowledge regarding the drug regimen as one of five major factors influencing compliance.

Adherence to a medication regimen can be viewed as a complex cognitive task, involving a variety of cognitive skills and

abilities. Lamy (1989), for example, emphasized three major steps that a patient has to follow in order to take his/her medications properly. First, the patient needs to understand the content of the instructions. Second, the patient must be able to remember the content of the instructions. And, third, the patient must remember to act according to the instructions.

The salience of cognitive variables is also supported anecdotally, given that the elderly cite memory problems as the primary reason for nonadherence. Only a few studies (Morrell, Park, & Poon, 1989), however, have directly examined cognitive demands, and the focus in these studies has been primarily on the role of memory in adhering to the proper timing for medication intake (Norell, 1985; Leirer, Morrow, Pariante, & Sheikh, 1988). However, basic research on memory indicates that the adequacy of recall is dependent on level of prior learning (Poon, 1985). Drug label information that is insufficiently learned or comprehended will be poorly recalled, if at all.

The three major objectives of our study are shown in Figure 1. The first major objective was to assess the elderly's level of understanding of the information on a prescription drug label. We predicted that level of comprehension would vary across different types of information contained on the label; comprehension would be higher for literal information such as number of pills to be taken per day, than for questions requiring inferences (e.g., how many days supply of medication does one refill provide?). Since no standard instrument exists for assessing comprehension of drug labels, a major task of the study

was the development of an instrument for measuring label comprehension. The psychometric properties and concurrent validity of the instrument were examined.

Insert Figure 1 about here

The study's second objective was to examine predictors of drug label comprehension. A major theme in the study of aging is that adults become more different as they age, and there is increasing variability with age on most behavioral measures (Willis, 1985). Thus, identifying the individual difference factors that are associated with variability in drug label comprehension is an important task for understanding the phenomenon and for the design of intervention efforts. Three sets of predictor variables were examined: personal characteristics, cognitive abilities, and behaviors and practices associated with taking of medications.

The third objective was to assess patients' compliance with their drug regimen. The literature suggests considerable variability in level of compliance. A number of studies report that 40-60% of patients are noncompliant at some point in time (Cooper, Love, & Raffoul, 1982; Kendrick & Bayne, 1982; Wandless, Mucklow, Smith, & Prudham, 1979). We were interested in exploring further the nature of the noncompliance - that is, the extent to which patients took less (underuse) versus more (overuse) of their medications than prescribed. Further, the patients' consistency in compliance behavior across drugs was

examined.

Methods

Subjects

Subjects were 115 community-dwelling older adults (Females = 89; Males = 26), with a mean age of 76.6 years (SD = 6.58; Range = 56-93). The sample was somewhat educationally advantaged with a mean educational level of 13.21 years (SD = 2.92; Range = 6-21); median annual income ranged from $10,000 to $16,000. Subjects reported themselves to be in good physical and mental health. On 6-point Likert scales, subjects rated as good their general health (M = 2.33; SD = 1.03), vision (M = 2.63; SD = 1.01), and hearing (M = 2.55; SD = 1.04). Positive self-ratings of health were supported by subjects' report of spending, on average, 1.84 days in the hospital (SD = 5.08; Range = 0-40) during the past year. Likewise, subjects rated their life satisfaction as happy (M = 2.76; SD = 1.16; Range = 1-6), on a 7-point Likert scale. Forty-one percent of the sample (40.9%; N = 47) were married; 39.1% of the subjects (N = 45) were widowed, and 20.1% (N = 23) were single or divorced.

Subjects were recruited from five sites in rural central Pennsylvania: two retirement communities; a low-income high rise for the elderly; a senior citizens' club; and a senior citizens' center. There were no site differences in age, educational level, self-rated health, vision, and hearing, or mean hospital days. Subjects from the low-income housing and the senior citizens' center had a significantly ($p < .05$) lower income level than the residents of the retirement communities. Subjects from

the senior citizens' club rated their life satisfaction lower ($p < .05$) than subjects in one of the retirement communities.

No significant gender differences were found for age, educational level, self-reported health, vision, and hearing, hospital days, or life satisfaction. Males reported a significantly higher income level (t (110) = 1.98; $p < .05$).

Procedure

Subjects participated in three one-hour sessions. All sessions were conducted in the subjects' residences or in the communities where they lived. In the first session, they were administered the Drug Label Comprehension measure in small groups under untimed conditions; information on prescription drugs taken by subjects was also obtained. In the second session, subjects were interviewed, individually, in their homes regarding their medication practices, and their understanding of drug labels. In the third session, subjects were administered the psychometric ability battery under standard timed conditions in small groups. All testing sessions were conducted by the second author, with an older adult woman serving as a proctor.

Measures

Drug Label Comprehension measure. This 42-item measure was developed to assess comprehension of information on seven prototypical prescription drug labels and associated auxiliary labels. Seven of the drugs taken orally and most commonly prescribed for older adults were identified in the literature (Cypress, 1982). Prototypical labels (e.g., appropriate dosage, intake instructions) and recommended auxiliary labels were

developed for each of the drugs in consultation with two clinical pharmacists. The seven drugs were: Furosemide, Dalmane, Diabinase, Tetracycline, Slow-K, Penicillin, and Darvocet-N.

The test involved four subscales representing four content domains: (1) Timing and amount of medication (e.g., number of pills per day); (2) strength/dosage of medication (e.g., dosage in mg); (3) duration of prescription and refills (e.g., number of days per refill); and (4) auxiliary label information (e.g., special intake information or information on possible side-effects). Figure 2 illustrates the type of information contained in each subscale.

Insert Figure 2 about here

Psychometric properties of the measure were examined. The total test alpha was .82. Intercorrelations among the four subscales ranged from .12 to .55; subscale alphas ranged from .45 to .85. Test-retest reliability for a subsample of participants (N = 42) over a six week interval was .78.

Interview schedule. To assess the concurrent validity of the Drug Label Comprehension measure, subjects were interviewed regarding their understanding of drug labels. Subjects were shown four medicine bottles and asked questions regarding information printed on the labels; two of the drugs are commonly taken by the elderly (Hygroton, Indocin). The remaining two drugs involved medications currently taken by the study participants; thus, two of the four drugs varied across subjects.

Questions were similar in content to those included on the Drug Label Comprehension measure.

To assess vision and tactile limitations, subjects were asked to read the prescription signature and auxiliary labels for each drug and to open containers with regular and child-proof lids. In addition, subjects were interviewed regarding their medication practices; they were asked about external memory aides (e.g., pill reminder containers) and behaviors (e.g., placement of pill bottles) they employed in complying with their medication regimen.

Psychometric ability battery. Subjects were assessed on tests representing five primary mental abilities. Verbal ability was assessed by a vocabulary measure (Ekstrom, French, Harman, & Derman, 1976). Semantic relations ability was assessed by Verbal Analogies I (Guilford, 1969), in which the subject was shown a semantically related pair of words and asked to identify the word in a second pair exhibiting the same relationship. Figural relations ability was assessed by the Culture Fair test, Scale 2 (Cattell & Cattell, 1957), in which the subject was shown a set of line drawings and must determine the relationship among the drawings and identify the missing part of the figure. Inductive reasoning ability was assessed by the Letter Series test (Thurstone, 1962), in which the subject had to identify the next letter in a series of letters. Memory span ability was assessed by the backwards digit span test in which subjects recalled strings of 2-9 digits in backwards order (Ekstrom, French, Harman, & Derman, 1976). Prior research (Baltes, Cornelius,

Spiro, Nesselroade, & Willis, 1980; Cattell, 1971) indicated that these abilities represent the second-order intelligence dimensions of fluid (figural relations, inductive reasoning) and crystallized intelligence (verbal, semantic relations).

Prescription drug medications. Information was obtained on all prescription drugs currently taken by the subjects. Information included: drug name, strength/dosage, intake instructions, and auxiliary labels. Drugs were coded according to therapeutic categories, employing the American Hospital Formulary Service (AHFS) categorization system.

Patient compliance. To assess patient compliance, the number of pills remaining in two of the subject's prescription medications were counted and compared with the number of pills expected if the medication had been taken according to label instructions, given the date of prescription or the date of the last refill. A window of three days deviation in the number of pills predicted to be taken according to label instructions was allowed. Subjects were categorized as compliant (i.e., number of pills remaining was exactly correct or within the three-day window), overusers (i.e., less pills remained than predicted), or underusers (i.e., more pills remained than predicted). Drugs for which subjects' indicated that they deviated from prescribed intake, based on doctors' orders, or drugs with instructions to take "as needed" were not included in the compliance assessment.

Results

The findings of the study will be reported in four sections: (1) Subjects' performance on the Drug Label Comprehension measure; (2) subjects' medication behaviors and practices; (3) correlates of subjects' understanding of drug labels; and (4) patient compliance and its relationship to comprehension of drug labels.

Performance on Drug Label Comprehension Measure

Subjects' overall performance on the Drug Label Comprehension measure was quite high; on average, subjects answered 80% of the questions correctly (M = 33.61; SD = 4.59; Range = 15-42). There were no age or gender differences on the total test score.

Subjects' level of comprehension, however, varied for different types of label information. Figure 3 shows the mean proportion of correct responses for the four subscales. Subjects' scores were highest for subscales assessing the timing and amount of medication to be taken as indicated on the prescription signature (e.g., after meals, number of pills per day). Subjects answered correctly, on average, 82% of timing and amount questions (M = 9.32; SD = 1.48; Range = 5-11). Subjects also did well on questions about the auxiliary labels that involved special instructions regarding intake or side effects (e.g., take with orange juice); 94% of these questions were answered correctly (M = 14.82; SD = 2.30; Range = 4-16).

Insert Figure 3 about here

However, subjects showed a poorer understanding of the information regarding the duration of the prescription or refills. Only 64% of the questions on how many days a prescription would last, or the date on which a refill would be needed were answered correctly (M = 7.09; SD = 1.52; Range = 3-12). For example, only half of the subjects could compute the number of days a prescription would last (including refills), when given the relevant information (i.e., number of tablets per day; number tablets in prescription; number of refills) on the prescription signature. In addition, subjects had difficulty answering questions regarding the dosage or strength of their medication (M = 2.37; SD = 1.05; Range = 1-4). For example, only one-third of the subjects understood the relationship between grams and milligrams when asked to convert the dosage from milligrams into grams.

Medication Behaviors and Practices

Figure 4 presents the distribution of prescription drugs taken. Subjects took on average 3.5 prescription drugs (SD = 2.24; Range = 0-10). Figure 5 shows the most commonly taken drugs by therapeutic category (AHFS codes). The therapeutic categories for the most frequently taken drugs were (a) cardiovascular drugs (51.3% of all drugs); (b) electrolytic, caloric, water balance medications (45.2%); (c) central nervous system agents (42.6%); (d) hormones and synthetic substitutes

(27.6%); (e) gastrointestinal drugs (19.1%); (f) eye, ear, nose and throat preparations (12.2%); and (g) autonomic drugs (10.4%).

Insert Figures 4 and 5 about here

Subjects (N = 94; 11 subjects dropped out after the first testing session) were also asked about the practices and behaviors they employed to ensure the proper intake of drugs. In particular, subjects were asked about external memory aides or reminder behaviors that they used. Figure 6 shows the proportion of subjects reporting various behaviors and practices associated with the medication regimen. Thirty-seven percent (N = 36) of the subjects used an external memory aide (e.g., pill reminder, daily planner) to help them remember when to take their medications. The most common memory aide was a daily or weekly pill reminder. Fifty-nine percent (N = 57) reported that they adopted a certain behavior to aid recall; most frequently, subjects reported keeping the drug containers in the dining area (N = 35) or placing pills near their dinner plate (N = 7).

Insert Figure 6 about here

Many subjects sought additional information on their medications; fourty percent of the subjects reported that they had used or currently used a reference source or other informational material regarding their medications. The use of reference aides may have been prompted in part because of the

limited information on the prescription label regarding special instructions for drug intake. Less than 25% (23.9%) of the subjects' drug containers had auxiliary labels, that provided additional instructional information and warned of potential side effects.

Vision problems which limit the elderly's ability to read information on drug labels are an important issue. Twenty-two per cent of our healthy older subjects reported that they needed to use a vision aide, other than glasses, in order to read the labels on their medicine bottles. The most common aide was a magnifying glass.

Drug packaging is another important factor in medication compliance. Subjects were asked to open containers with a regular lid and a child-proof lid. Over half of our subjects had difficulty with or could not open a child-proof lid; 35% made several attempts before opening the child-proof lid, and 17% could not open the lid at all (see Figure 7).

Insert Figure 7 about here

Predictors of Drug Label Comprehension

The variables that predicted subjects' performance on the Drug Label comprehension test were examined via a series of simultaneous multiple regression analyses. Three sets of predictor variables were included: (1) Person variables, including age, education, income, marital status, health ratings, hospital days (within the last year), number of prescription

drugs currently taken; (2) practices and behaviors related to drug intake, including external memory aides, reminder behaviors, use of reference materials, and vision aides; and (3) mental abilities, including vocabulary, verbal analogies, culture fair, inductive reasoning and memory span test scores.

First, regression analyses were conducted separately for each of the three sets of predictor variables (Table 1). In the model examining person variables, income ($p < .0001$), days in hospital in the previous year ($p < .0001$), age ($p < .01$), and education ($p < .05$) were significant predictors (F (10,86) = 5.274; $p < .0001$; $R^2 = .38$). In the model examining medication behaviors and practices, none of the included predictors reached the level of statistical significance. In the model examining cognitive abilities, the significant predictors were performance on the Culture Fair test representing figural relations ability ($p < .01$) and performance on the vocabulary test representing verbal ability ($p < .01$; F (7,89) = 9.594; $p < .0001$; $R^2 = .43$).

Insert Table 1 about here

A final regression model, representing a combined set of "best" predictors from the three variable domains is shown in Table 2. The statistically significant predictors in this model were days in the hospital in the past year ($p < .001$), vocabulary score ($p < .01$), culture fair test score ($p < .01$), memory span score ($p < .05$), and income ($p < .05$). The predictors included

in this final model accounted for 51% of the variance in the drug label comprehension scores (F (5.91) = 18.91; $p < .0001$; $R^2 = .51$).

Insert Table 2 about here

Patient Compliance

Patient compliance was assessed via the pill count method for two of the subjects' drugs. A window of three days deviation (e.g., $\pm$ 3 day pill supply) in the number of pills predicted to be taken according to label instructions was allowed. Subjects were categorized as compliant (i.e., number of pills remaining was exactly correct or within the 3-day window), overusers (i.e., less pills remained than predicted), or underusers (i.e., more pills remained than predicted). Excluded from compliance analyses were subjects deviating from the prescription based on doctors' orders, and prescriptions to be taken "as needed".

Figure 8 shows the proportion of subjects in each compliance category. For each of the two drugs examined, approximately 45% of the subjects were compliant, about 35% took fewer pills than prescribed, and about 20% of the subjects took more pills than prescribed. The proportion of subjects in each compliance category was similar across the two drugs examined.

Insert Figure 8 about here

To further examine compliance, a compliance accuracy ratio was computed (number pills taken/number of pills should have taken). The accuracy of taking the drugs was 69% and 76%, respectively, for the two drugs.

Finally, we examined patient's consistency in compliance across the two drugs studied. Fifty-six per cent (N = 14) of the subjects coded as compliant for the first drug were also compliant for the second drug. Likewise, 55.6% (N = 10) of the underusers on drug 1 were also underusers with regard to drug 2; the ratio was 41.7% for overusers (N = 5).

Discussion

Findings of the study will be summarized in five major points.

One: Level of Comprehension Varies for Different Types of Information on the Label

The Drug Label Comprehension measure examined the elderly's understanding of four different types of information commonly found on the prescription signature. The elderly's performance was best for literal comprehension, requiring simply the restatement of explicit information on the label. For example, subjects had little difficulty identifying the number of pills to be taken and the number of times per day to take a medication. In addition, subjects' literal interpretation of special instructions appearing on the auxiliary labels was good, on average. For example, they understood that the label "Don't operate heavy machinery while taking this medication" involved a warning regarding automobile driving.

As an aside, we are aware that the literature suggests that there are problems even with the interpretation of literal information such as the timing of medication intake. For example, one study found considerable disagreement among patients regarding the interpretation of the instruction to take a medication three times a day (Mazzullo, Cohn, Lasagna, & Griner, 1974). There was controversy over whether this should be interpreted as taking the medication in conjunction with meals, versus mid morning, mid afternoon, and at night, etc.

Two: Older Adults Have Difficulty with Information Requiring Inferences and Abstract Reasoning

Our results suggest that older adults have most difficulty with information that requires making inferences. For example, older adults have considerable difficulty (63% correct) inferring the duration of their prescription or the number of days a refill would last, given the information on the label. This limitation may affect patient compliance in two respects: First, the patients may have difficulty determining, in advance, when to refill a prescription or to make an appointment with their physician regarding a new prescription. Second, it suggests that the elderly may have difficulty self-monitoring their compliance behavior. For example, a number of our subjects were genuinely surprised when in our assessment of compliance they were identified as underusers or overusers. It appears that many elderly function with regard to compliance in a day-to-day concrete operational manner (e.g., "I take 3 pills each day"), rather than conceptualizing compliance within a more wholistic

perspective, which would involve self-monitoring of their intake of the prescription in total (rather than daily dosages). This inefficiency in cognitive self-monitoring behavior has also been observed in basic research on cognitive functioning (Rybash, Hoyer, & Roodin, 1986).

Three: Personal Characteristics and Cognitive Abilities are Significant Correlates of Label Comprehension

The regression analyses indicated that over 50% of the variability in comprehension of drug labels was associated with personal and cognitive variables. Age was not a significant predictor, while income and health condition were. It is important to note that the most salient predictor of label comprehension was the number of hospital days in the past year. This suggest that subjects in the poorest health (and most likely to have been given new prescriptions in conjunction with their hospital stay), often are among the most limited in label comprehension.

Second, these findings support our previous findings on the salience of cognitive variables as predictors of real life tasks involving printed material (Willis & Schaie, 1986). The same fluid and crystallized cognitive abilities (Culture Fair test, Vocabulary test) were found to be useful predictors as in previous research. This finding suggests that the cognitive abilities traditionally studied by psychologists are of relevance to explaining individual differences on tasks of daily living. More importantly, the findings suggest that label comprehension

is a complex cognitive task, involving multiple and diverse mental abilities and skills.

Four: There Are Wide Individual Differences in Label Comprehension

The elderly vary considerably in their level of label comprehension. Moreover, the reason for their performance limitations varied across subjects. For example, for some subjects, the major difficulty in responding to the questionnaire seemed to lie in their sensory or mobility limitations; their accuracy rate was quite high, given enough time and vision magnification aides. The poor performance of other subjects appeared to relate primarily to cognitive limitations. The implication of this variability in performance is that it is important that assessment of the elderly's medication problems and the development of intervention strategies be individualized to the strengths and limitations of the older individual.

Five: Rate of Patient Noncompliance Is Of Concern Even In Healthy, Well-Educated Elderly Samples

The finding that approximately 50% of the sample was noncompliant at some time is of concern, given the importance of medications in managing the chronic conditions of the elderly, and hence in the maintenance of independent functioning. Similar rates of noncompliance have been reported in other studies of ambulatory elderly (Kendrick & Bayne, 1982; Wandless, Muchkow, Smith, & Prudhan, 1979). Underuse rather than overuse, was the major nonadherence problem in this study, as has been found in

previous research (Cooper, Love, & Raffoul, 1982). Moreover, the data suggest that the individuals' rate of compliance is only modestly consistent across multiple drugs. Only 50% of subjects rated as compliant on the first drug were also compliant on the second drug.

In summary, we believe this study emphasizes the need to consider both intra- and interindividual variability in the study of medication behaviors in the elderly (Willis & Baltes, 1980). With regard to intraindividual variability, we found that an older adult's level of comprehension varies across different types of label information. Intraindividual variability is also indicated by the finding that only modest consistency in level of compliance was found for the same individual across medications. With regard to interindividual variability, we found that there was considerable variability among older adults in their understanding of label information. The importance of individual difference variables in accounting for variability in label comprehension was illustrated by findings of the regression analyses. Recognition of the salience of variability issues will also be important in the development of strategies and programs to facilitate and enhance the elderly's medication compliance.

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Table 1

A. Personal Variables Predicting Label Comprehension (N=97)

Predictors	Beta	t-Value	p<[t]	
Age	-0.275	-2.808	.006	**
Education	0.199	2.093	.039	*
Income	0.424	3.966	.0002	***
Marital Status	-0.202	-1.943	.055	
Life Satisfaction	0.014	0.146	.884	
Health	-0.042	-0.417	.667	
Vision	0.029	0.314	.754	
Days in Hospital	-0.340	-4.031	.0001	***
Nr. of Doctorvisits	0.020	0.223	.824	
Nr. of Medications	-0.066	-0.674	.502	

F=5.274; df=10,86; p<.0001; R^2=.380

B. Medication Behaviors Predicting Label Comprehension (N=97)

Predictors	Beta	t-Value	p<[t]
Difficulty Open	-0.056	-0.283	.778
Difficulty See	0.118	0.436	.664
Handbook	0.061	0.273	.786

F=0.530; df=6,93; p<.667; R^2=0.017.

C. Cognitive Variables Predicting Label Comprehension (N=97)

Predictors	Beta	t-Value	p<[t]	
Vocabulary	0.275	2.875	.005	**
Culture Fair, A	0.316	2.937	.004	**
Culture Fair, B	0.039	0.390	.698	
Culture Fair, D	-0.051	-0.503	.616	
Letter Series	0.058	0.537	.592	
Verbal Analogy	0.081	0.892	.375	
Memory Span	0.147	1.498	.138	

F=9.594; df=7,89; p<.0001; R^2=0.430.

Note. * p<.05; ** p<.01; *** p<.001.

Table 2

Combined Model: Predictors of Label Comprehension (N=97)

Predictors	Beta	t-Value	p<[t]	
Income	0.164	1.995	.049	*
Days in Hospital	-0.289	-3.820	.001	***
Vocabulary	0.245	2.733	.008	**
Culture Fair, A	0.266	2.907	.005	**
Memory Span	0.184	2.172	.033	*

F=18.911; df=5,91; p<.0001; R^2=0.510.

Note. * p<.05; ** p<.01; *** p<.001.

Figure 1

OBJECTIVES OF THE STUDY

1. To assess the elderly's comprehension of information on prescription drug labels.

2. To examine predictors of drug label comprehension.

3. To assess patient compliance.

Figure 2

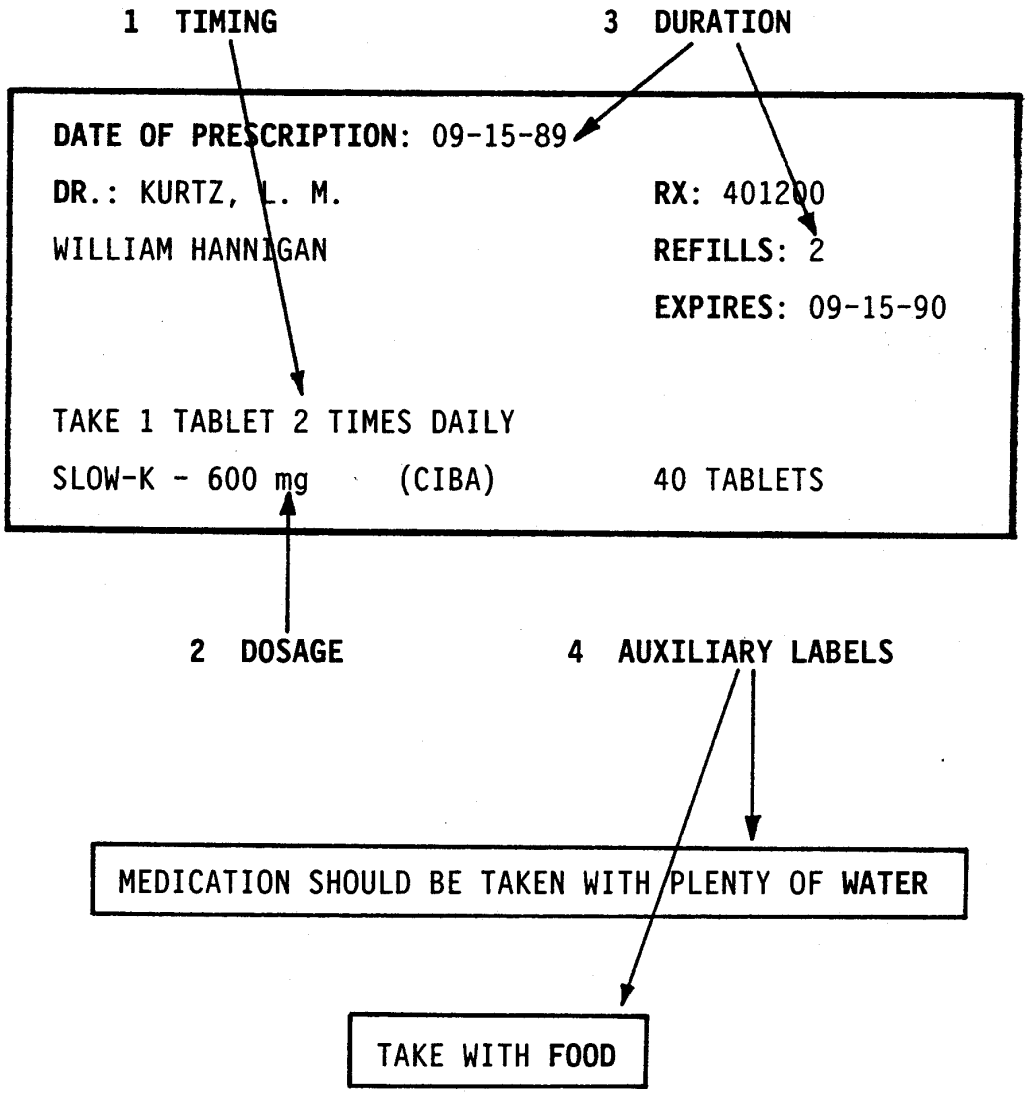

1 TIMING
3 DURATION
DATE OF PRESCRIPTION: 09-15-89
DR.: KURTZ, L. M.
RX: 401200
WILLIAM HANNIGAN
REFILLS: 2
EXPIRES: 09-15-90
TAKE 1 TABLET 2 TIMES DAILY
SLOW-K - 600 mg (CIBA)
40 TABLETS
2 DOSAGE
4 AUXILIARY LABELS
MEDICATION SHOULD BE TAKEN WITH PLENTY OF WATER
TAKE WITH FOOD

Figure 3

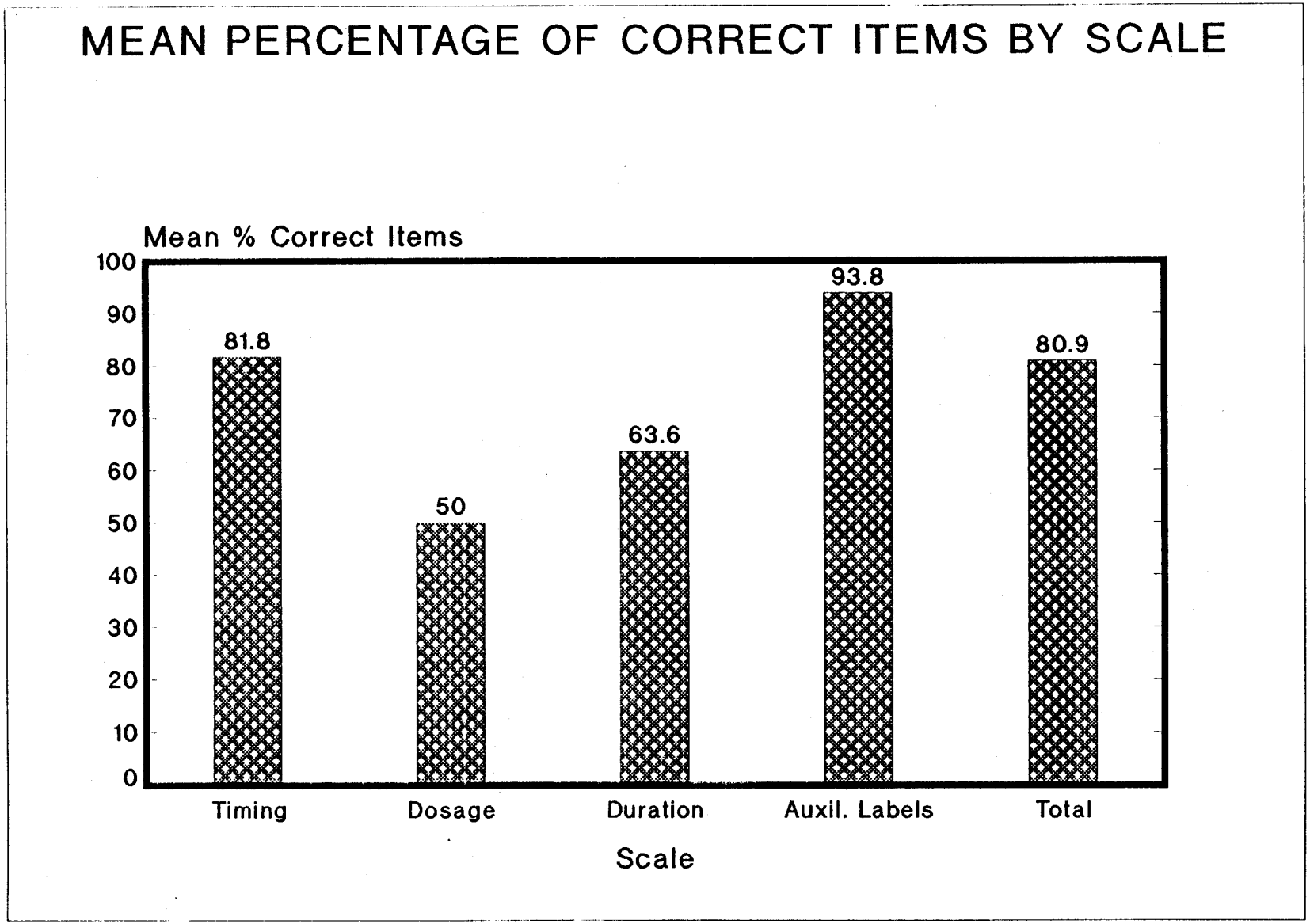

MEAN PERCENTAGE OF CORRECT ITEMS BY SCALE
Mean % Correct Items
100
90
80
70
60
50
40
30
20
10
0
81.8
50
63.6
93.8
80.9
Timing
Dosage
Duration
Auxil. Labels
Total
Scale

Figure 4

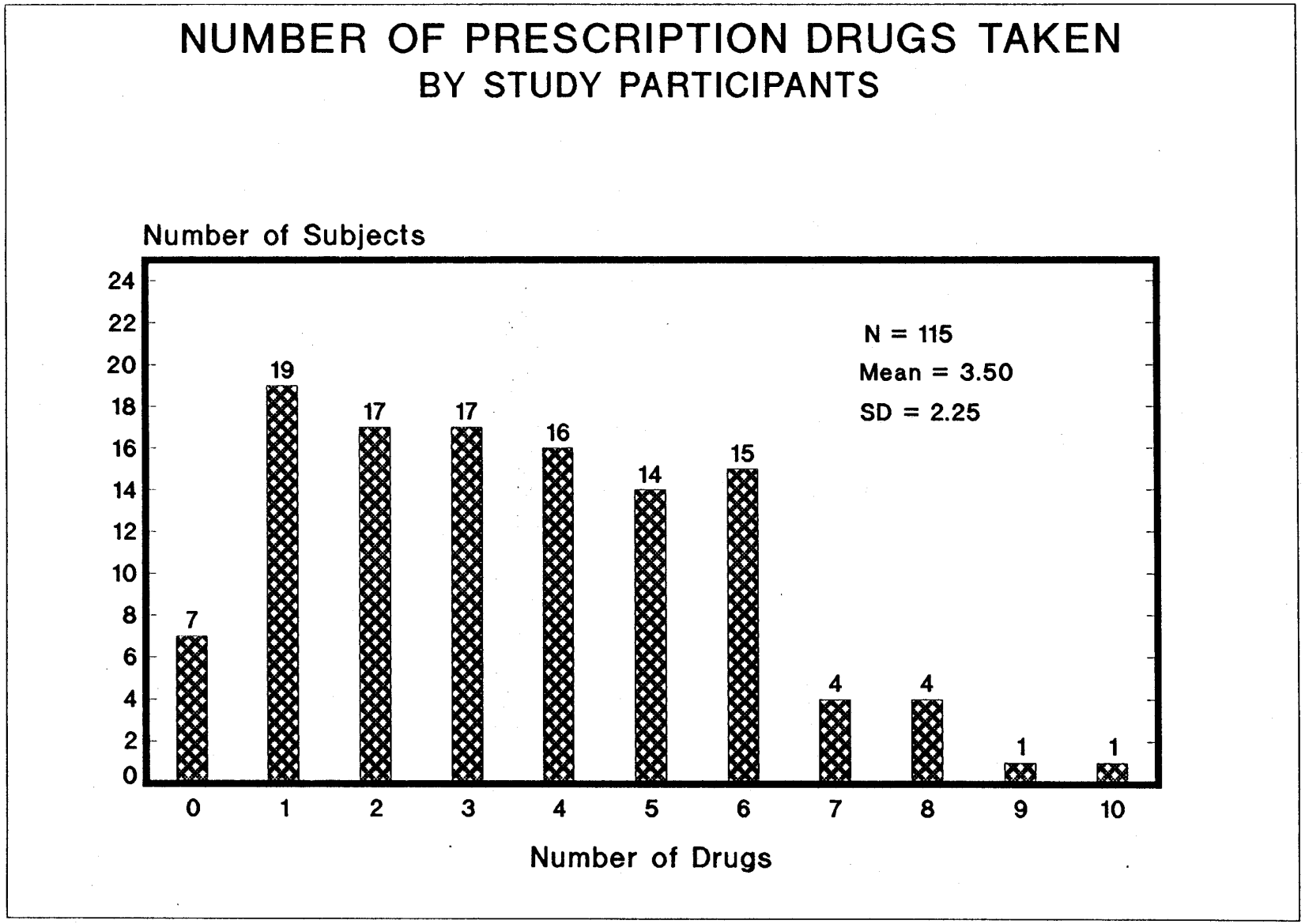

NUMBER OF PRESCRIPTION DRUGS TAKEN
BY STUDY PARTICIPANTS
Number of Subjects
24
22
20
18
16
14
12
10
8
6
4
2
0
N = 115
Mean = 3.50
SD = 2.25
7
19
17
17
16
14
15
4
4
1
1
0
1
2
3
4
5
6
7
8
9
10
Number of Drugs

Figure 5

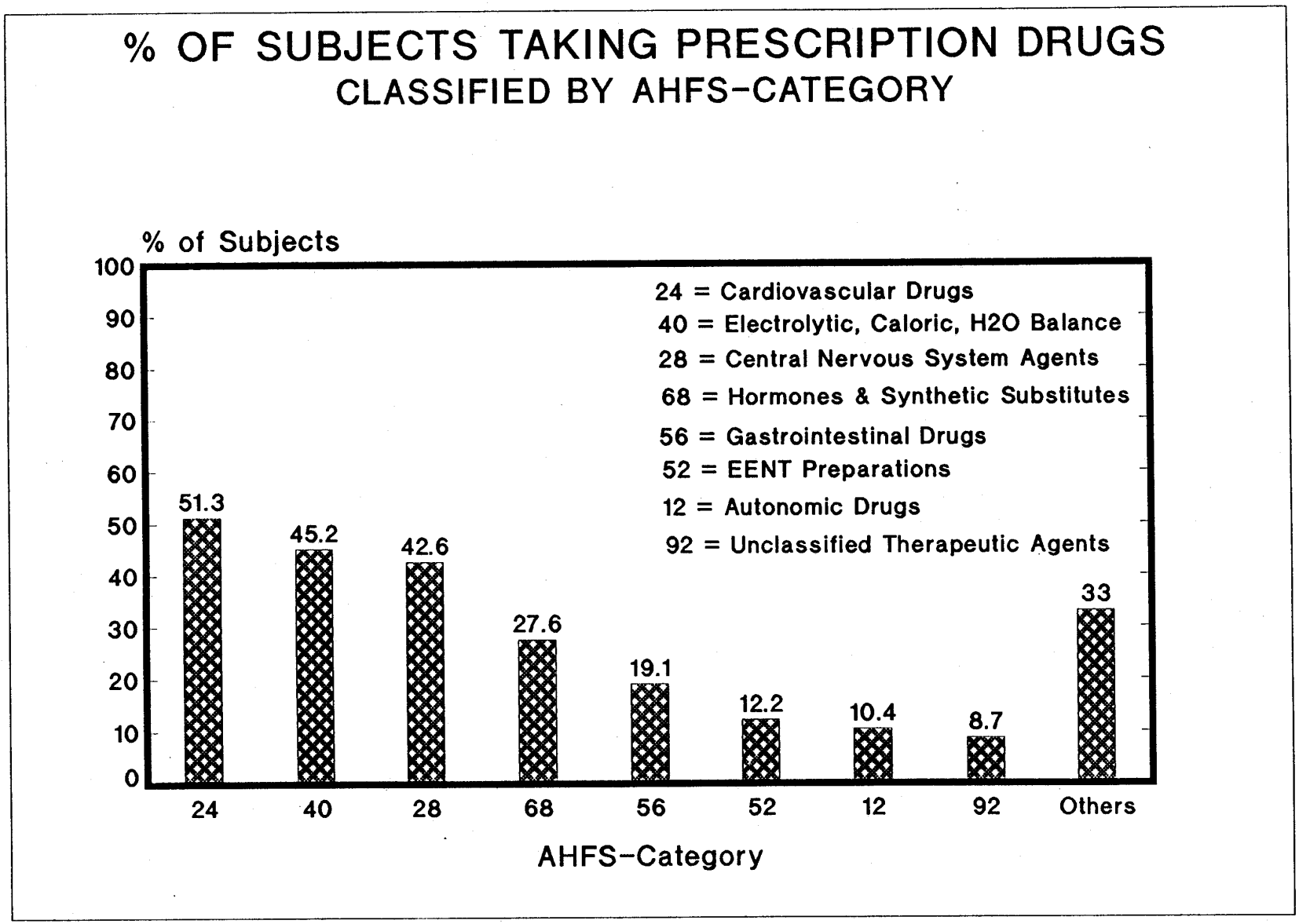

% OF SUBJECTS TAKING PRESCRIPTION DRUGS
CLASSIFIED BY AHFS-CATEGORY
% of Subjects
100
90
80
70
60
50
40
30
20
10
0
24 = Cardiovascular Drugs
40 = Electrolytic, Caloric, H2O Balance
28 = Central Nervous System Agents
68 = Hormones & Synthetic Substitutes
56 = Gastrointestinal Drugs
52 = EENT Preparations
12 = Autonomic Drugs
92 = Unclassified Therapeutic Agents
51.3
45.2
42.6
27.6
19.1
12.2
10.4
8.7
33
24
40
28
68
56
52
12
92
Others
AHFS-Category

Figure 6

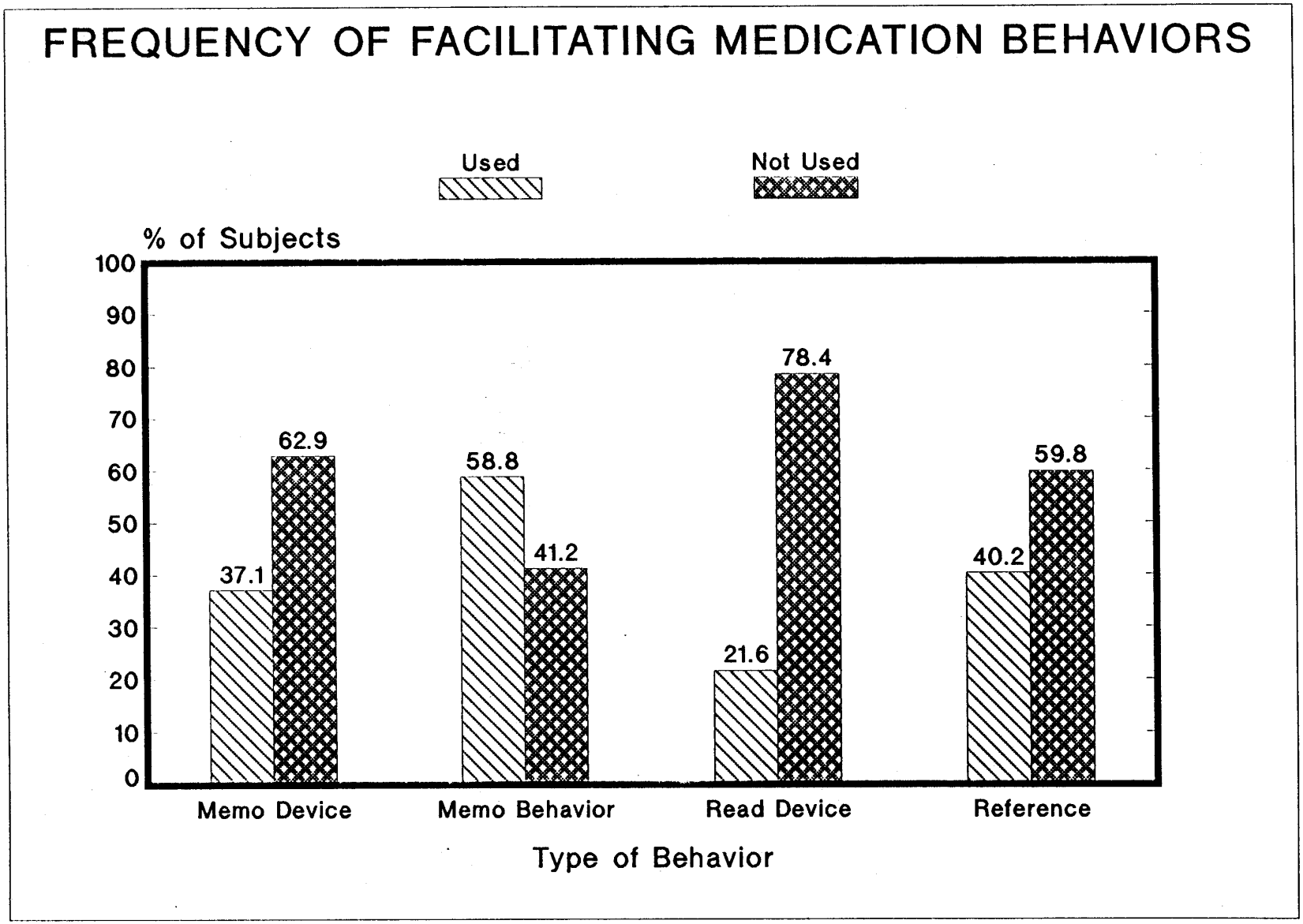

FREQUENCY OF FACILITATING MEDICATION BEHAVIORS
Used
Not Used
% of Subjects
100
90
80
70
60
50
40
30
20
10
0
37.1
62.9
58.8
41.2
21.6
78.4
40.2
59.8
Memo Device
Memo Behavior
Read Device
Reference
Type of Behavior

Figure 7

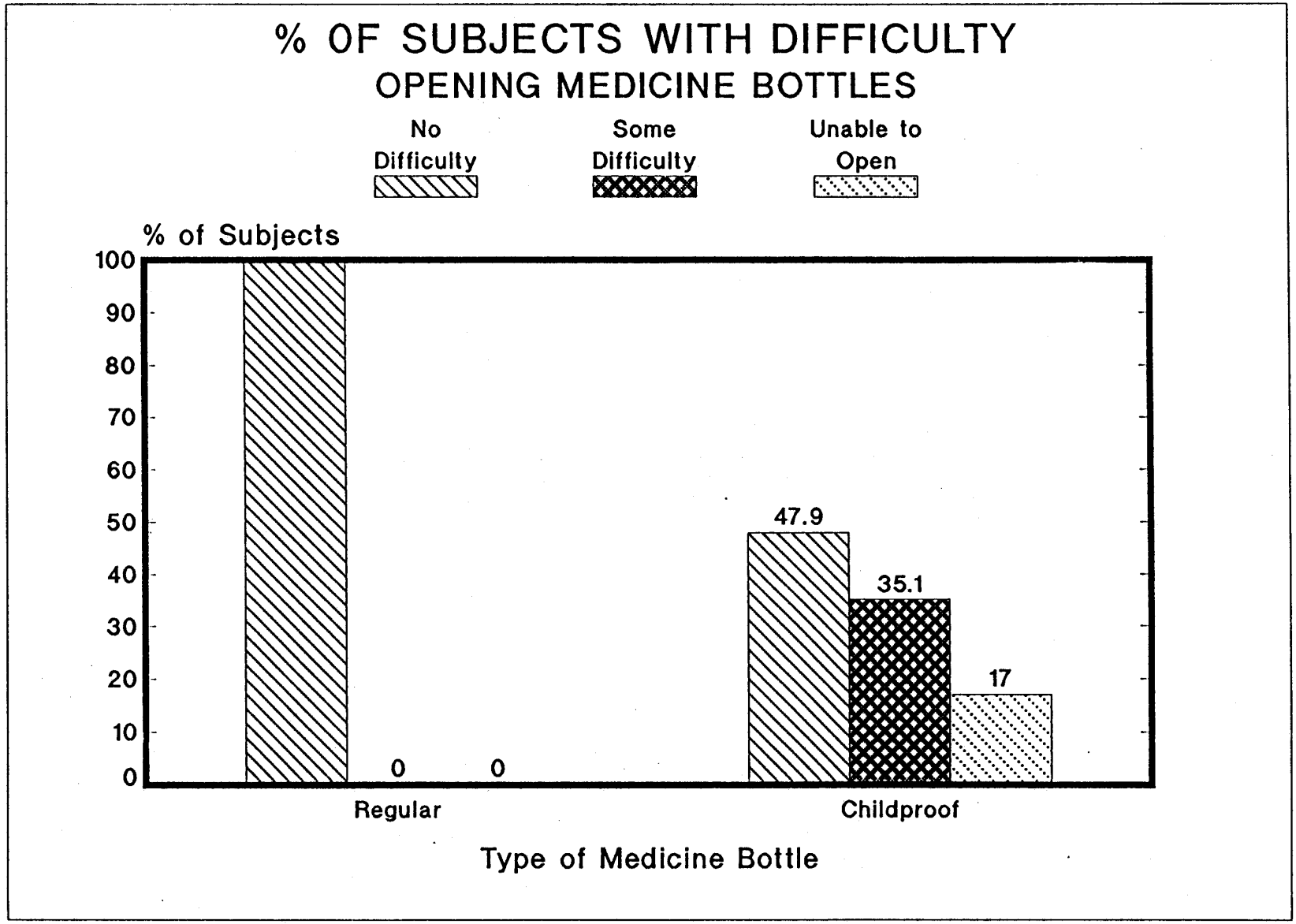
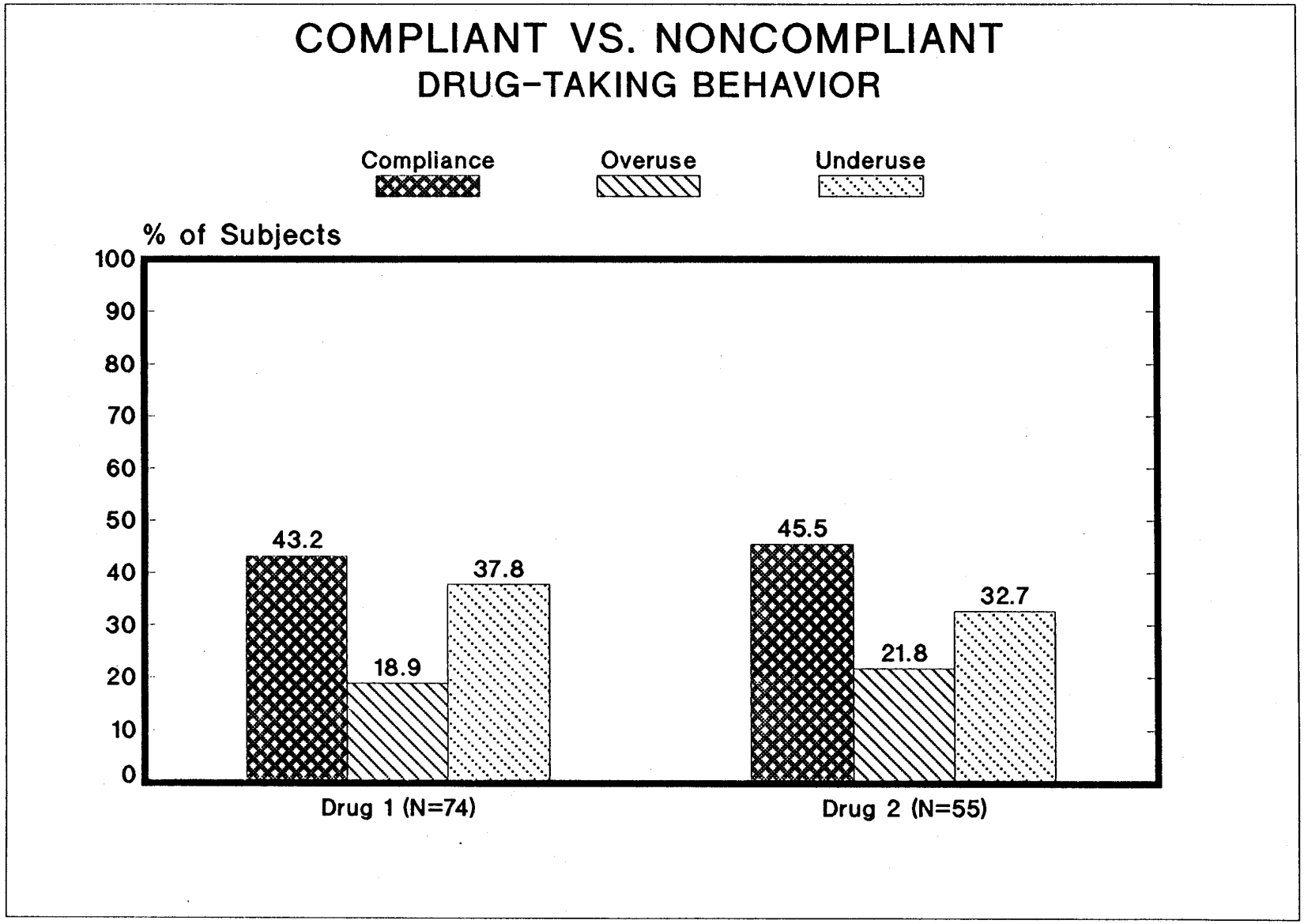

% OF SUBJECTS WITH DIFFICULTY
OPENING MEDICINE BOTTLES
No Difficulty
Some Difficulty
Unable to Open
% of Subjects
100
90
80
70
60
50
40
30
20
10
0
0
0
47.9
35.1
17
Regular
Childproof
Type of Medicine Bottle

Figure 8


COMPLIANT VS. NONCOMPLIANT
DRUG-TAKING BEHAVIOR
Compliance
Overuse
Underuse
% of Subjects
100
90
80
70
60
50
40
30
20
10
0
43.2
18.9
37.8
45.5
21.8
32.7
Drug 1 (N=74)
Drug 2 (N=55)