A STUDY TO DETERMINE THE EFFECTS OF NOON-HOUR DRINKING OF ALCOHOLIC BEVERAGES ON TYPEWRITING PERFORMANCE

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A STUDY TO DETERMINE THE EFFECTS OF NOON-HOUR DRINKING OF ALCOHOLIC BEVERAGES ON TYPEWRITING PERFORMANCE

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PREFACE

This study was concerned with how the noon-hour consumption of alcoholic beverages affects typewriting performance. Ten persons consumed various amounts of alcoholic beverages for lunch, and then each person typed two 5-minute timed writings after lunch. The timed writing scores (after consuming various amounts of alcohol) were then compared to two 5-minute timed writing scores administered after no alcoholic beverages were consumed to see if there was a change in typing speed and accuracy when alcohol was consumed. Particular emphasis was placed on determining if alcohol affected both typing speed and accuracy, speed only, or accuracy only.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

According to Edward L. Johnson, of the Firestone Tire and Rubber Company (1, p. 66), American business suffers from a "$15 billion annual hangover due to alcoholism." That $15 billion includes $10 billion in lost work time and salaries, $2 billion for health and welfare services, and $3 billion in property damage, medical expense, workmen's compensation claims and insurance. The survey also shows that:

1. Alcoholic employees typically are 35 to 50 years of age.
2. About half are women.
3. Twenty-five percent are white collar workers such as secretaries and bookkeepers.
4. Thirty percent are blue collar workers and normally are in the more skilled craftsman category--machinists, electricians, etc.
5. Forty-five percent are professional and/or managerial personnel.
6. Thirteen percent have completed grammar school, 37 percent have completed high school, and 50 percent have graduated from or at least attended college.

James M. Roche (2, pp. 120-121), former Chairman of the Board, General Motors Corporation, says no segment of society is immune from

alcoholism. Persons suffering from alcoholism make up five to 10 percent of any given group--doctors, lawyers, butchers, bakers, assemblymen or secretaries.

However, problem drinking may exist even when an alcoholic state has not been reached. The number of estimated and proven alcoholics is not large at all compared to the number of problem drinkers. A problem drinker is defined as a person who does not limit consumption but follows whatever the trend may be--occasional heavy drinking but rarely drinking to drunkeness. A problem drinker often goes for days or weeks without drinking (3, pp. 58-86).

No estimate has been made on the number of alcoholics and problem drinkers employed in offices throughout the United States perhaps in part because problem drinkers are difficult to detect. Problem drinkers often present a problem to their employers; but because problem drinkers are only occasionally handicapped by excess alcohol consumption, many supervisors desire to ignore the situation or handle it themselves instead of referring the problem drinker to the company medical program for diagnosis and treatment. Quite often the drinking problem continues until the employee has to be relieved of his job.

Many businesses realize the extent of alcohol abuse and are implementing or have implemented alcohol control programs, sometimes called employee assistance programs. The supervisors are instructed in observing and recording work performance of employees and confronting the worker with evidence of poor work performance. The alcoholic or problem drinker is then referred to the company doctor or community-sponsored alcohol control program for diagnosis and treatment (4, pp. 55-56).

Some of the characteristics of an alcoholic or problem drinker would include: long lunches, drowsiness in afternoon, poor judgment,

erratic behavior, early departure, unexplained absences, and hand tremors (5, pp. 73-74). The alcoholic employee seems to work in "spurts" and will work extremely hard for a while because he or she may not be capable of handling work loads later. Even though the alcoholic or problem drinker may be accomplishing the required work load, he or she may not be around when needed (6, pp. 6-10).

Statement of Problem

The goal of this study was to determine the effect of consumption of alcoholic beverages for lunch on typewriting performance. Ten persons consumed various amounts of alcoholic beverages for lunch, and then each person typed two 5-minute timed writings after lunch. The timed writing scores (after consuming various amounts of alcohol) were then compared to two 5-minute timed writing scores administered after no alcoholic beverages were consumed to see if there was a change in typing speed and accuracy when alcohol was consumed. Particular emphasis was placed on determining if alcohol affected both typing speed and accuracy, speed only, or accuracy only.

The following schedule describes the testing sessions:

Session 1

No drinking for lunch
Two timed writings administered after lunch

Session 2

One beer immediately before lunch
Two timed writings administered after lunch

Session 3

One beer immediately before lunch
One beer during lunch
Two timed writings administered after lunch

Session 4

One beer immediately before lunch
One beer during lunch
One beer immediately after lunch
Two timed writings administered after lunch

Session 5

One cocktail immediately before lunch
Two timed writings administered after lunch

Session 6

One cocktail immediately before lunch
One cocktail during lunch
Two timed writings administered after lunch

Session 7

One cocktail immediately before lunch
One cocktail during lunch
One cocktail immediately after lunch
Two timed writings administered after lunch

To keep the experiment in a natural office-lunch situation, no breathalyzer test was used nor did subjects drink different amounts of alcoholic beverages based upon body weight. Also, no differentiation was made between previous drinking experiences.

Need for Study

Approximately 77% of adult men and 60% of adult women drink at least once a year. In fact, alcohol is the most widely used and abused drug in the United States (7, pp. 122-153).

Some drinkers like the effects alcohol produces. Others drink to socialize at parties, while others drink to hide a deeper problem. Whatever the reason, alcohol has a high potential for abuse.

As stated earlier, American businesses suffer from a $15 billion annual hangover due to alcoholism. If 25 percent of the alcoholic workers are secretaries and bookkeepers, this means that one-quarter

of the $15 billion (or $3.75 billion annually) is wasted by alcoholic or problem drinking secretaries and bookkeepers. For some workers, the effects of noon-hour drinking can last for as little as a few minutes after the return from lunch (if alcohol is consumed in early part of lunch hour), or it can last for a few hours or all afternoon depending on the amount of alcohol consumed.

Definition of Terms

Alcohol

Alcohol is a chemical compound that describes ethyl alcohol, C_2H_5OH.

Alcoholic

An alcoholic is an addictive drinker who drinks to such an excess that psychological dependence has resulted and the drinking has resulted in inability to cope with family, friends, and employment.

Blood Alcohol Concentration

Blood alcohol concentration (or BAC) is the amount of alcohol that shows up in the bloodstream after alcohol consumption.

Breathalyzer

A breathalyzer is a breath test that is given to suspected drinkers to determine blood alcohol concentration.

Central Nervous System

The central nervous system is the major nerve control system for the body.

Cirrhosis

Cirrhosis is a disease of the liver involving progressive destruction of liver cells.

Congeners

Congeners are substances other than water and alcohol in the beer.

Ethyl Alcohol

Ethyl alcohol is similar to ether and causes an anesthetic effect on the central nervous system.

Distilled Spirits

Distilled spirits are made from fermented mixtures which are heated in a still and include whiskey, vodka, gin, and brandy.

Latency

Latency is the period of time between the administration of a drug and the beginning of response.

Meprobamate

Meprobamate is a bitter carbamate (acid in the form of salt) used as a tranquilizer.

Oxidation

Oxidation is a combination of oxygen with alcohol--one means by which alcohol is eliminated from the body.

Placebo

A placebo is a non-alcoholic drink served under the guise of an alcoholic beverage.

Problem Drinker

A problem drinker is a person who uses alcoholic beverages in excess of customary dietary or social use but who can usually control the amount consumed.

Proof

Proof is defined as the alcoholic content of distilled spirits.

Psychomotor Skills

Psychomotor skills require mental/physical coordination.

CHAPTER II

REVIEW OF LITERATURE

Background Information on Alcohol

All beverage alcohols contain "ethyl," known chemically as ethanol and commonly as grain alcohol. From a chemical point of view, ethyl alcohol is similar to ether and causes an anesthetic effect on the central nervous system.

Beer is made by fermenting malted (sprouted) barley. Distilled spirits (including whiskey, vodka, gin, and brandy) are made from fermented mixtures which are heated in a still. The alcohol content of distilled spirits is indicated by the term "proof." The number preceding the word "proof" is twice the percentage of alcohol by volume. Thus a whiskey which is labeled as 90-proof contains forty-five percent alcohol by volume (4, pp. 34-35).

All alcoholic beverages have basically the same effects on the body. The only important difference is the amount of alcohol they contain. Beers have a low alcoholic content, wines have intermediate status, and distilled spirits are high in alcoholic content. Any two drinks containing the same amount of alcohol will produce approximately the same effect. Table I shows the alcoholic beverages yielding similar quantities of alcohol (6, p. 126).

TABLE I

ALCOHOLIC BEVERAGES YIELDING SIMILAR QUANTITIES OF ALCOHOL

Beverage	Alcohol Content (percent)	Approximate Amount in Ounces Yielding 1/2 Ounce in Alcohol
Beer	4	12
Dinner Wine	12	4
Dessert Wine (blended)	21	2½
80-proof liquor	40	1¼
100-proof liquor	50	1

After a person consumes an alcoholic beverage, the beverage is conveyed to the stomach where the process of absorption begins. In absorption, the alcohol passes through the walls of the gastrointestinal tract into the bloodstream (4, p. 37). A number of factors can significantly influence the absorption of alcohol:

1. Concentration of alcohol--the greater the concentration of alcohol in a beverage, the more rapid will be the rate of absorption.
2. Nonalcoholic substances in alcoholic beverages--generally the more nonalcoholic substances in a beverage, the more slowly will be the absorption of alcohol.
3. Rate of drinking--drinking in small divided amounts prevents high concentrations of alcohol, and less alcohol will be available for absorption.

4. Amount of food in the stomach--the presence of any food in the stomach delays the absorption of alcohol.
5. Body weight--the more a person weighs, the larger the blood-stream into which the alcohol passes, and the more diluted the alcohol becomes. Women tend to be smaller and require less alcohol than men to achieve the same effects.
6. Differences between men and women--research shows that women are more susceptable to the effects of alcohol during the days immediately preceding menstrual cycle than during the rest of the cycle. Research has indicated that women had significantly higher BAC and faster absorption rates than the men tested at a comparable time (8, p. 190).
7. Drinking history and body chemistry--some long-term drinkers develop a tolerance to alcohol so that an increased amount of alcohol must be consumed to produce the same effects obtained with the original dose. Individual reactions to alcohol affect absorption of alcohol. Such factors as anger, fear, stress, and nausea may affect the emptying time of the stomach (4, pp. 38-39).

The most important effect of alcohol is its depressant action of the central nervous system. The first part of the brain to be affected is the center that controls judgment and inhibitions. Alcohol interferes with both the storage and retrieval of information. When a person is under the influence of alcohol, his ability to learn and to recall past events and information is decreased. His or her problem-solving ability is also greatly diminished. Even simple puzzles and arithmetic problems may be difficult for the intoxicated person to solve (7, p. 127).

The alcohol concentration in any one organ of the body is influenced by two things: the blood supply and the water present in the organ. A higher maximum concentration of alcohol will occur in organs with either a rich blood supply or a high water content (9, p. 145). The brain contains both a high content of water and a plentiful blood supply.

To determine the amount of alcohol which has been absorbed into the bloodstream, the blood-alcohol level is calculated. This figure is the ratio of alcohol present in the blood to the total volume of blood expressed as a percent. A blood-alcohol level of 0.25 percent equals 2.5 parts of ethyl alcohol to 1,000 parts of blood (4, pp. 39-40).

Light or moderate drinking has no known permanent effect on the brain, although some religious groups will dispute this. However, excessive drinking can permanently damage the brain (7, p. 129).

In addition to affecting the brain, alcohol also affects other body organs. The small blood vessels of the skin become dilated, thus the face and neck appear red and the person feels warm. Alcohol affects the eyes by making focusing more difficult. Because all voluntary muscles are under the control of the brain and central nervous system, muscular activity is impaired. Large amounts of alcohol can interfere with digestion and may irritate the stomach lining. The most serious effect of alcohol consumption is to the liver and its auxiliary systems. Almost 95% of the alcohol taken into the body is oxidized (combined with oxygen) by the liver. Some alcoholics suffer from cirrhosis, a hardening of the liver.

Once the liver has converted the alcohol to carbon dioxide and water, it can then be exhaled and excreted. Generally the body can absorb one ounce of alcohol per hour from the time it enters the body until it leaves the body.

The oxidation of alcohol cannot be speeded up. The old belief that coffee will help one to sober up is not true. The only thing coffee may do is help the drinker overcome drowsiness (7, pp. 129-133).

As mentioned previously, the most noticeable effect of alcohol consumption is in the brain. The table on page 12 shows the average effects of steady alcoholic drinking, with the amount of alcohol consumed and the blood alcohol level (10, p. 9).

Studies have indicated that equivalent blood levels produce different effects on different people and also different stages of intoxication depending on whether the specimen was taken during active drinking or the sobering up phase (11, p. 21).

Most studies, too, have indicated that psychomotor skills are generally impaired under the influence of alcohol. However, considerable compensatory functioning is possible. Such a case would be an extroverted driver who drives worse because his customary restraint and caution are set aside. In comparison, the introverted individual will drive more carefully when intoxicated because he recognizes that he must be more cautious. Given small amounts of alcohol, some subjects occasionally show improvement in performance tests. The relaxing effect of the alcohol exceeds the psychomotor impairment in such instances (11, pp. 24-25).

TABLE II

THE AVERAGE EFFECTS OF ALCOHOL

Amount of Alcohol	Effect	Blood-Alcohol Level
1 to 2 bottles of beer or cocktails	Flushing of the skin Inhibitions begin to recede Heart speeds up Gaiety	4/100's of 1%
3 to 4 bottles of beer or cocktails	Judgment is slower Giddiness Coordination is a bit off	6/100's of 1%
5 to 6 bottles of beer or cocktails	Vision a bit slurred Speed a little fuzzy Reaction time slowed	10/100's of 1%
6 to 8 bottles of beer or cocktails	Staggering Seeing double Loss of balance	16/100's of 1%
15 to 20 bottles of beer or cocktails	Skin is clammy Pupils are dilated Unconsciousness	40/100's of 1%
20 to 25 bottles of beer or cocktails	Alcoholic Poisoning Death	50/100's of 1%

Specific Alcohol-Related Studies

Psychomotor Skills

Testing psychomotor skills while subjects are under the influence of alcoholic beverages was the goal of the following six studies. While none of the studies deal with typewriting performance, all studies are applicable to skills utilized while typing.

The effects of alcoholic beverages and congeners on psychomotor skills in old and young subjects was studied by Wilson, Barboriak, and Kass (11, p. 485). Two groups of 30 volunteers each, one aged 60 to 85 and the other 21 to 35, were given three psychomotor tests before and after drinking vodka, bourbon, or water. In all three of the following tests (Digit Symbol Test, Hand Steadiness Test, and Body Sway Test) the young performed better than did the old after water, while alcohol impaired the performance of the young more than that of the old. The effects of vodka vs. bourbon were also studied. Vodka impaired performance of the old. Bourbon reduced hand steadiness in the old, while vodka did not.

The effects of alcohol on psychomotor skills and decision-making in a driving task was studied by K. J. Snapper (13). Men (four light and four moderate drinkers) were asked to perform a driving task on a test course that involved an avoidance maneuver and to make decisions after they consumed alcoholic beverages about whether the attempt would be successful. Moderate financial payments were used to motivate them to perform as well as possible. The results showed more impairment of psychomotor skill in light drinkers than in moderate drinkers. Only small effects on the riskiness of decisions were noted.

In 1970, Serise, Coudray, Marty, and Freour (14, p. 574) studied psychomotor reactions to low blood alcohol. Group I consisted of 15 alcoholics and Group II consisted of 15 normal subjects who consumed on the average of about 0.25 liters of wine per day (approximately one cup). All subjects were asked to drink and then perform eight psychomotor tests. In general, performance was modified by alcohol, and in several tests the performance of the alcoholics was significantly improved. It was noted that alcoholics have learned to compensate, and for some, the alcoholic state has become the normal state.

Idestrom and Cadenius (15, p. 486) investigated the time relations of the effects of alcohol on psychomotor skills compared to placebo (non-alcoholic drink served under the pretense of an alcoholic beverage). Tests were performed in choice reaction time, tapping speed, bimanual hand coordination, and standing steadiness. No significant effects were obtained after the placebo. After .8 gram of alcohol per kilogram of body weight (.024 oz. of alcohol per 2.2 pounds of body weight) definite impairment was noted on all tests. After .4 gram per kilogram of body weight (.012 oz. of alcohol per 2.2 pounds of body weight), the tests showed significant deterioration in choice reaction time and coordination, but only minor changes in the other tests performed.

A study was performed by M. Linnoila on the effects of drugs and alcohol on psychomotor skills related to driving (16, p. 464). While this study deals with driving, it does bring out the following general facts: the main reason for increased traffic risks after drinking is impaired information processing, particularly when information comes from multiple sources. In a divided attention task, subjects under the

influence tend to concentrate on one phase of the task and neglect all others. Vision and hearing are fairly resistant to the effects of alcohol. Extroverts are more sensitive to alcohol than introverts, since extroversion is a sign of a weak superego and alcohol may increase risk taking in traffic.

The influence of test length and difficulty level of performance after alcohol was analyzed by E. G. Lewis in 1973 (7, pp. 78-88). Card-sort, visual-motor-coordination, and problem-solving tests were administered in a counter-balanced order and at two levels of difficulty. One control and one alcohol group worked only on easy tests, the others on more difficult ones. No significant differences were found between the performance of the control group and alcohol group on the easy tests or on the more difficult problem-solving test. However, fewer cards were sorted correctly on the more difficult sorting task after consuming 1.23 gram of 95% alcohol per kilogram of body weight (.04 oz. of 95% alcohol per 2.2 pounds of body weight).

All studies on psychomotor skills revealed that skills were modified by alcohol. Some subjects performed better after alcohol. Other testing showed more impairment of psychomotor skill in light drinkers than in moderate drinkers.

Blood Alcohol Concentration

Three studies were performed on blood alcohol concentration. All studies compared performace to BAC (blood alcohol concentration) and tried to determine at what BAC count impairment occurs and how long the impairment lasts.

The blood alcohol concentration and reaction time was studied by J. R. Young in 1970 (18, p. 1006). Simple reaction time (pressing a key in response to a signal light) was tested after ten subjects drank about 4 ml. (.8 teaspoon whiskey per kilogram, or 2.2 pounds of body weight) and after a "cider punch" placebo. Alcohol produced a significant increase in reaction time. When the BAC was falling, reaction time tended to return to normal more rapidly than BAC did.

A study was undertaken by M. Vogel-Sprott involving self-evaluation of performance and the ability to discriminate blood alcohol concentrations (19, p. 215). Two groups of ten social drinkers were given a coding task after drinking various amounts of alcohol. Before the test, Group I had received training in discriminating their own blood alcohol concentration. Both groups were asked to predict the effects of alcohol on their performance. Task performance deteriorated progressively until the peak BAC (mean 0.065%) and then improved rapidly during the descending BAC curve. Before drinking, both groups predicted the greatest impairment of performance at the peak BAC but neither expected the rapid improvement during the descending BAC. The trained group predicted more impairment than did the untrained group. It was concluded that training may help create caution among drinkers.

Interactions between alcohol, task difficulty, and compatibility in a choice reaction task was studied by Robinson and Peebles (27, p. 731). Subjects performed four button-pressing tasks in response to a light stimulus on each of seven days. At a blood alcohol concentration of 0.05%, significant impairment occurred only on the most complex task; at 0.10%, impairment occurred on all tasks.

Research on blood alcohol concentration reveals that task performance and reaction time tend to return to normal more rapidly than BAC. Blood alcohol concentration of 0.05% caused slight impairment, while BAC of 0.10% caused impairment on all tasks.

Handwriting

A study of the influence of alcohol on handwriting was performed by O. Hilton (20, p. 230). Each of the 20 subjects copied a passage from a book before and after drinking uncontrolled amounts of vodka and a mixer for an hour in a simulated social situation. Changes in handwriting were of an individual nature and in most subjects could not definitely be attributed to alcohol. In some subjects the writing became large, more spread out, less legible and precise and with poorer alignment. No change was observed in writing pressure, shading, or writing speed. Some subjects wrote uniformly throughout the experiment.

In 1971, Brun and Reisby (21, p. 1118) performed a study on handwriting changes following meprobamate (bitter acid in the form of salt used as a tranquilizer) and alcohol, a graphometric-graphological investigation. The handwriting of 89 university students showed that both alcohol and meprobamate separately caused significantly more writing errors than placebo, and alcohol with meprobamate significantly more than alcohol alone. On graphometric measures (size of letters, spaces between letters), no significant differences were found between placebo and the drug conditions, but significantly more subjects showed an increase in the size of letters after alcohol and alcohol with meprobamate than after placebo or meprobamate.

Rate of Consumption

Moskowitz and Burns (22, p. 767) studied the rate of drinking on human performance. All groups were given alcohol in doses sufficient to produce blood alcohol concentration (BAC) of 0.10% but were required to drink at different rates. The groups drank the dosages in either 15 minutes, 30 minutes, 1 hour, or 4 hours. The subjects then completed tests of response latency, a visual backward masking test and a hand steadiness test. In general, the performance of the faster drinkers was poorer than that of the slower drinkers.

Choice Reaction Time

Shillito, King and Cameron (23, pp. 1022-1034) investigated the effects of alcohol on choice reaction time. The subjects performed a key-pressing task at three different levels of BAC and after a placebo. Performance was measured by response time, movement time, and total time. Error scores were also obtained. It was observed that higher mental processes (information transmission in this case) are less sensitive to alcohol effects than skills which involve muscular coordination, such as tracking tasks, or the manipulation of objects. The task performed was not one in which large error scores were usually found. However, accuracy appeared to be more sensitive than speed to the effects of alcohol.

Memory

In 1971, R. S. Ryback (24, p. 1136) studied the effects of alcohol on memory. Immediate, short-term, and long-term memory were studied. He found that the alcohol most severely disrupted short-term memory.

Women and Alcohol

A study was performed by K. Gustafson in 1974 regarding "the new woman--does she drink like a man." The study concluded that women formerly began drinking heavily later in life than men because women face role conflicts later. This is not so today because they now drink more and at an earlier age. Sex role confusion as a consequence of women's liberation is listed as a possible reason for the increase in drinking.

Work Safety

Wolkenberg, Gold, and Tichauer studied the delayed effects of acute alcoholic intoxication on performance with reference to work safety (26, p. 769). A series of tests were administered to subjects to determine the effects of alcohol in a simulated work situation. Each subject was tested in four situations: sober, peak intoxication, morning after, and afternoon after. Tests included an eye-hand coordination apparatus simulating the motions commonly found in industrial practices. The results indicated that the motion patterns of individuals in industrial work remain drastically changed for several hours after alcohol is eliminated from the body. These changes include lengthened reaction time and poor motor performance. It was concluded that some of these effects would create safety and health problems in a real work situation.

Central Nervous System

The effects of ethanol in the central nervous system were studied by Leonard Goldberg (28, pp. 43-56). Subjective mood estimates and

objective performance tests were conducted on the subjects. In the subjective mood estimate, it was found that alcohol intake of even small amounts brought about a departure from normal, with a peak coinciding in time with that of blood alcohol level, then a subsequent fall, and then generally the mood intensity going back to normal before blood alcohol had reached zero. All tests administered indicated that performance returned to normal before the blood alcohol level is back to zero. However, some subjective moods such as tiredness and subjective work capacity may be impaired for some hours afterward.

Summary of Literature

In conclusion, research regarding alcohol consumption has revealed that psychomotor skills normally are impaired; reaction time is lowered; faster drinking means poorer performance; and short-term memory is impaired. Performance generally decreases until the peak BAC is obtained, then performance improves rapidly on the descending BAC curve; motion patterns of individuals remain drastically changed for several hours after alcohol is eliminated from the body; and tiredness or work capacity may be impaired for several hours after BAC is back to zero.

CHAPTER III

METHODS AND PROCEDURES

Hypothesis

Typing speed and accuracy will vary inversely with the amount of alcohol consumed--the greater the amount of alcohol consumed, the greater the decrease in speed and decrease in accuracy. Specifically, typewriting speed will decrease after typists consume: one beer, two beers, three beers, one cocktail, two cocktails, and three cocktails for lunch. In addition, typewriting accuracy will decrease after typists consume: one beer, two beers, three beers, one cocktail, two cocktails, and three cocktails for lunch.

Selection of Sample

The sample consisted of 10 persons (nine female and one male) who were either:

1. employed as a clerical worker, secretary, or bookkeeper on the Oklahoma State University campus.
2. enrolled in the College of Business Administration at Oklahoma State University as students.
3. employed as faculty of the College of Business Administration at Oklahoma State University.

All subjects had a minimum of one year of typewriting instruction at the high school or college level.

Subjects were selected who met the following minimum requirements:

1. were 21 years of age or older.
2. would voluntarily consume the required alcoholic beverages.
3. would be available for experimentation at the specified times.

The names of all subjects were kept confidential throughout the study, and persons were identified by number only.

Time Schedule

Subjects were asked to be available from 12:00 noon until 1:30 p.m. on the days of the experimentation. To meet the schedules of the participants, the experimentation was conducted on days convenient for the subjects.

Consumption Plan

The plan for consuming the alcoholic beverages was as follows:

Session 1

No drinking for lunch
Two timed writings administered after lunch

Session 2

One beer immediately before lunch
Two timed writings administered after lunch

Session 3

One beer immediately before lunch
One beer during lunch
Two timed writings administered after lunch

Session 4

One beer immediately before lunch
One beer during lunch
One beer immediately after lunch
Two timed writings administered after lunch

Session 5

One cocktail immediately before lunch
Two timed writings administered after lunch

Session 6

One cocktail immediately before lunch
One cocktail during lunch
Two timed writings administered after lunch

Session 7

One cocktail immediately before lunch
One cocktail during lunch
One cocktail immediately after lunch
Two timed writings administered after lunch

Conditions for Lunch

Subjects were instructed to eat a lunch of some type of sandwich, with possibly potato chips or light salad. Each subject selected his own menu and place for consumption.

Conditions of Alcoholic Beverages

Each beer consisted of a 12-ounce can of Coors, and in excess of "3.2" beer, which is sold only in retail liquor stores in Oklahoma.

Each cocktail consisted of three ounces of orange juice and vodka with the following mixture:

one ounce of 100 proof vodka

two ounces of frozen concentrated orange juice with required amount of water added.

The investigator provided each subject with the beer and cocktails used in the experiment. In addition, specific directions for consumption were given to each subject.

Conditions for Testing Alcohol Consumption

Subjects were just asked to drink in a natural office-lunch situation. No breathalyzer test was used, nor were subjects asked to drink different amounts of alcoholic beverages based upon body weight. Previous drinking history was not considered in this study.

Timed Writings

Two five-minute timed writings were administered at each session. Each timed writing was different, but all timed writings were equal in difficulty. The writings were selected from Triple-Controlled Timed Writings by Harold Palmer and Allen Agnew. Each of the selected timed writings contained a syllabic intensity (number of syllables per word) of 1.6, average word length (number of strokes per word) of 5.8, and percent of high frequency words (words included in the 1254 most frequently used words on the Dewey, Thorndike-Lorge, Horn-Petterson, and Silverthorn list) of 80 percent (29, p. ii).

Subjects were instructed to set their typewriters for double spacing and to start the timed writings over again if they finished before the time was up. Subjects were advised to type with control; that is, to regard accuracy as more important than speed. After completing each session of timed writings, subjects handed in their papers and left the room. They were not told of the results.

Computation of Typing Speed and Accuracy

After the two timed writings for each session were checked, the speeds of the two timed writings for that session were averaged to get an average speed for the session. Likewise, the number of errors for each session was averaged so that each participant had one speed score and one error score for each session.

Compilation of Results

After obtaining a speed and accuracy score for each session, the following plan was utilized to determine the results:

1. A graphical analysis of typing speed and accuracy for the various amounts of alcohol consumed by each participant was shown (see Figures 1-10 in Chapter IV).
2. A graphical analysis of group average typing speed and accuracy for the various amounts of alcohol consumed was shown (see Figure 11 in Chapter IV).
3. The percentage change in typewriting speed and accuracy for each participant was computed. Each day's score for each subject was compared to his or her Session 1 average when no alcohol was consumed. Then a percent of increase or decrease in speed and in accuracy was indicated (see Tables III - XII in Chapter IV).
4. The speed and accuracy scores of all 10 subjects were totalled to find the group average percentage change in typewriting speed and accuracy for each amount of alcohol consumed (see Table XIII in Chapter IV).

Questionnaire

After the completion of the drinking sessions, subjects were given a questionnaire (See appendix) and asked to fill it out when not under the influence of alcohol. The purpose of the questionaire was to see if, in the opinion of the participants, they felt any difference in typing ability after consuming various amounts of beer or cocktails.

CHAPTER IV

Findings

At the end of the experiment, it was concluded that beer or cocktails do alter typing performance. For some, the outward effects were noticeable, while others showed practically no effect from the alcohol consumed.

On the basis of the average group performance the hypothesis is accepted or rejected as follows:

1. Typewriting speed will decrease after typists consume one beer. Therefore, this portion of the hypothesis is rejected.
2. Typewriting speed will decrease after typists consume two beers. Therefore, this portion of the hypothesis is rejected.
3. Typewriting speed will decrease after typists consume three beers. Therefore, this portion of the hypothesis is accepted.
4. Typewriting accuracy will decrease after typists consume one beer. Therefore, this portion of the hypothesis is accepted.
5. Typewriting accuracy will decrease after typists consume two beers. Therefore, this portion of the hypothesis is accepted.
6. Typewriting accuracy will decrease after typists consume three beers. Therefore, this portion of the hypothesis is accepted.
7. Typewriting speed will decrease after typists consume one cocktail. Therefore, this portion of the hypothesis is rejected.

8. Typewriting speed will decrease after typists consume two cocktails. Therefore, this portion of the hypothesis is rejected.
9. Typewriting speed will decrease after typists consume three cocktails. Therefore, this portion of the hypothesis is accepted.
10. Typewriting accuracy will decrease after typists consume one cocktail. Therefore, this portion of the hypothesis is accepted.
11. Typewriting accuracy will decrease after typists consume two cocktails. Therefore, this portion of the hypothesis is accepted.
12. Typewriting accuracy will decrease after typists consume three cocktails. Therefore, this portion of the hypothesis is accepted.

Analysis of Typing Speed

The upper portion of Figures 1-10 shows the timed writing speed of each participant for each session, and the upper portion of Figure 11 shows a group average typing speed and accuracy for the various amounts of alcohol consumed. Each score represents the average speed obtained on the two timed writings administered during the session. The straight line indicates timed writing speed after beer was consumed, and the dotted line indicates timed writing speed after cocktails were consumed.

Eight of the ten participants increased their speed after drinking one beer for an average speed increase of 1.50 words per minute. Six

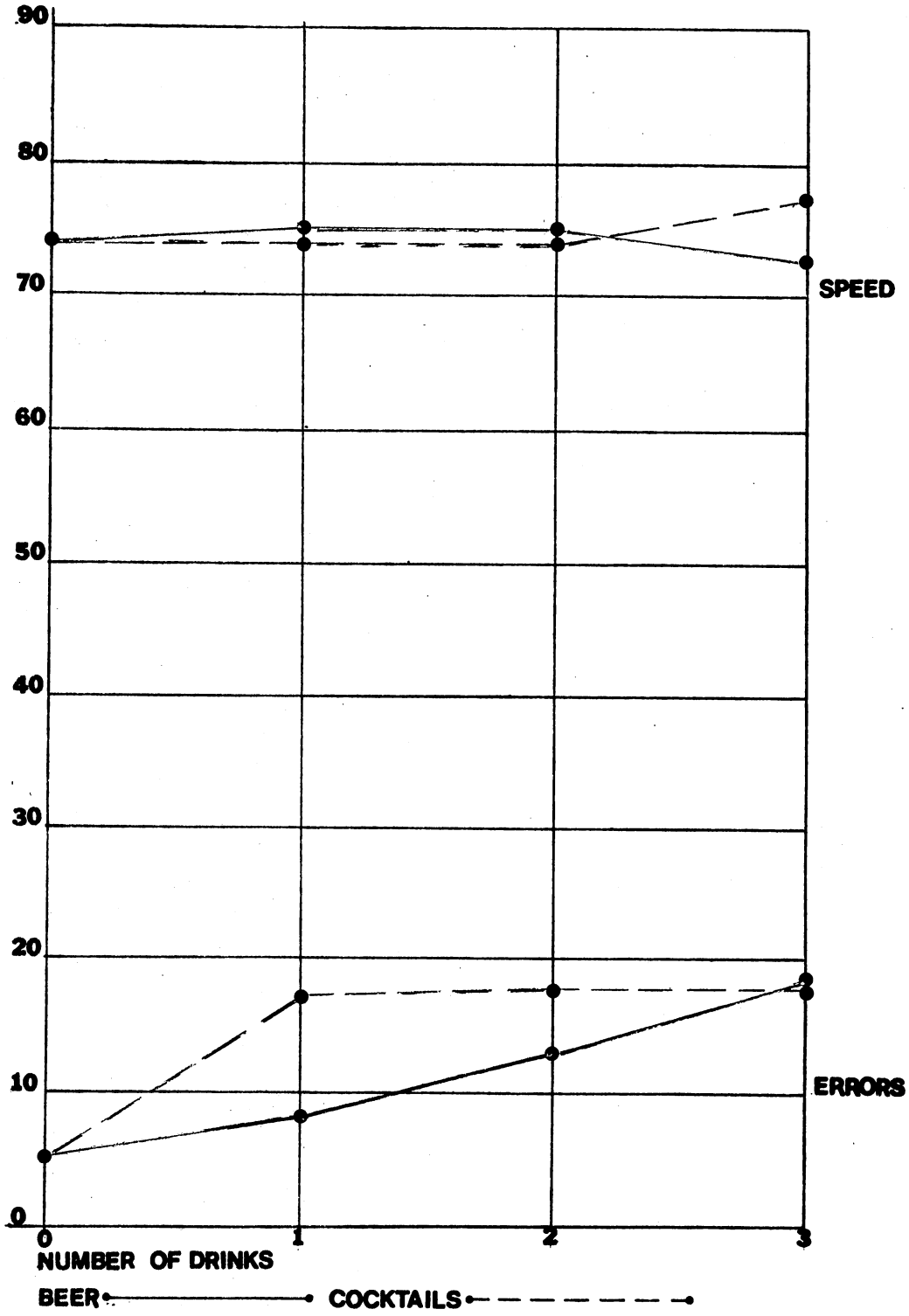

Figure 1. Typewriting Speed and Accuracy of Participant No. 1

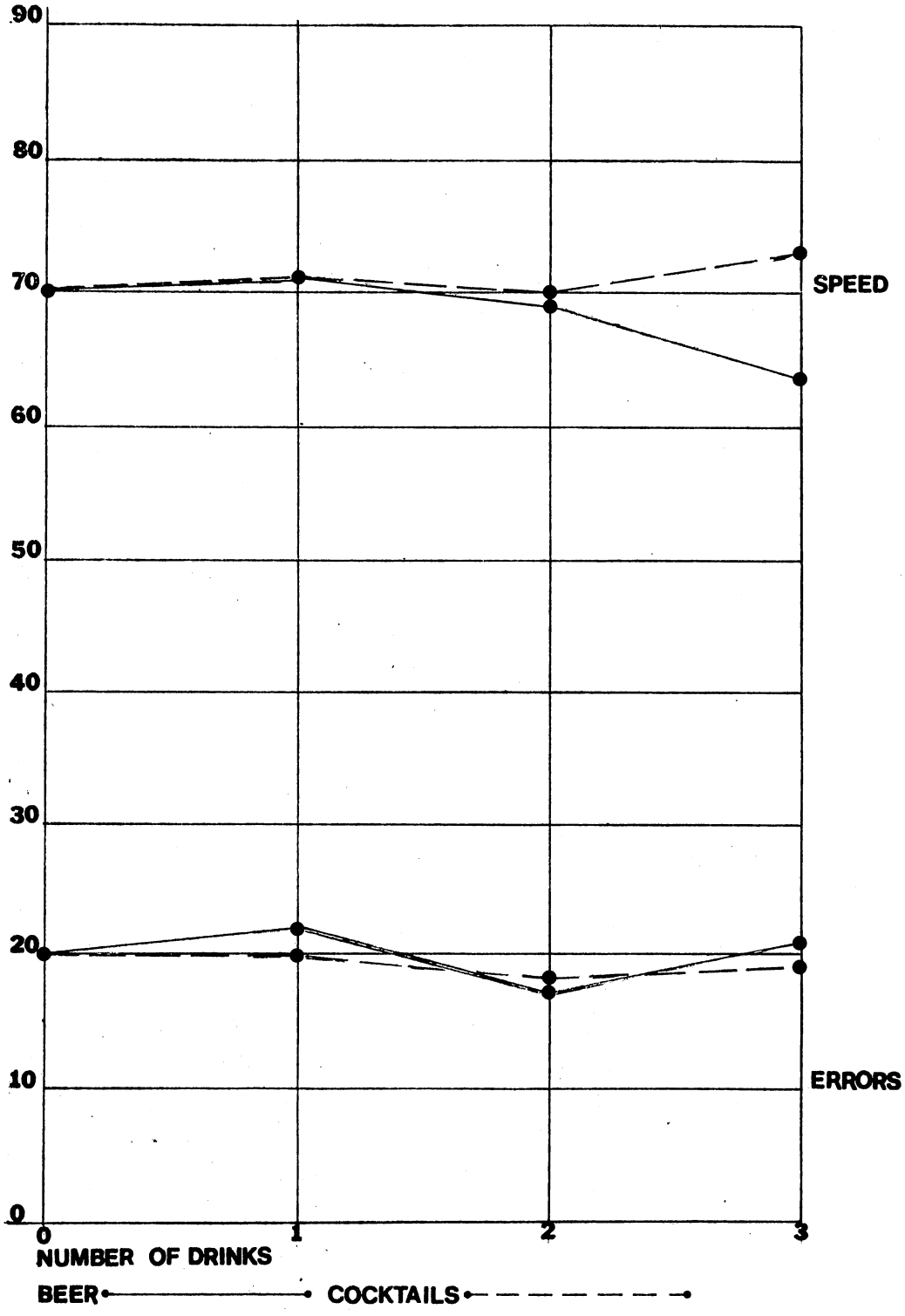

Figure 2. Typewriting Speed and Accuracy of Participant No. 2

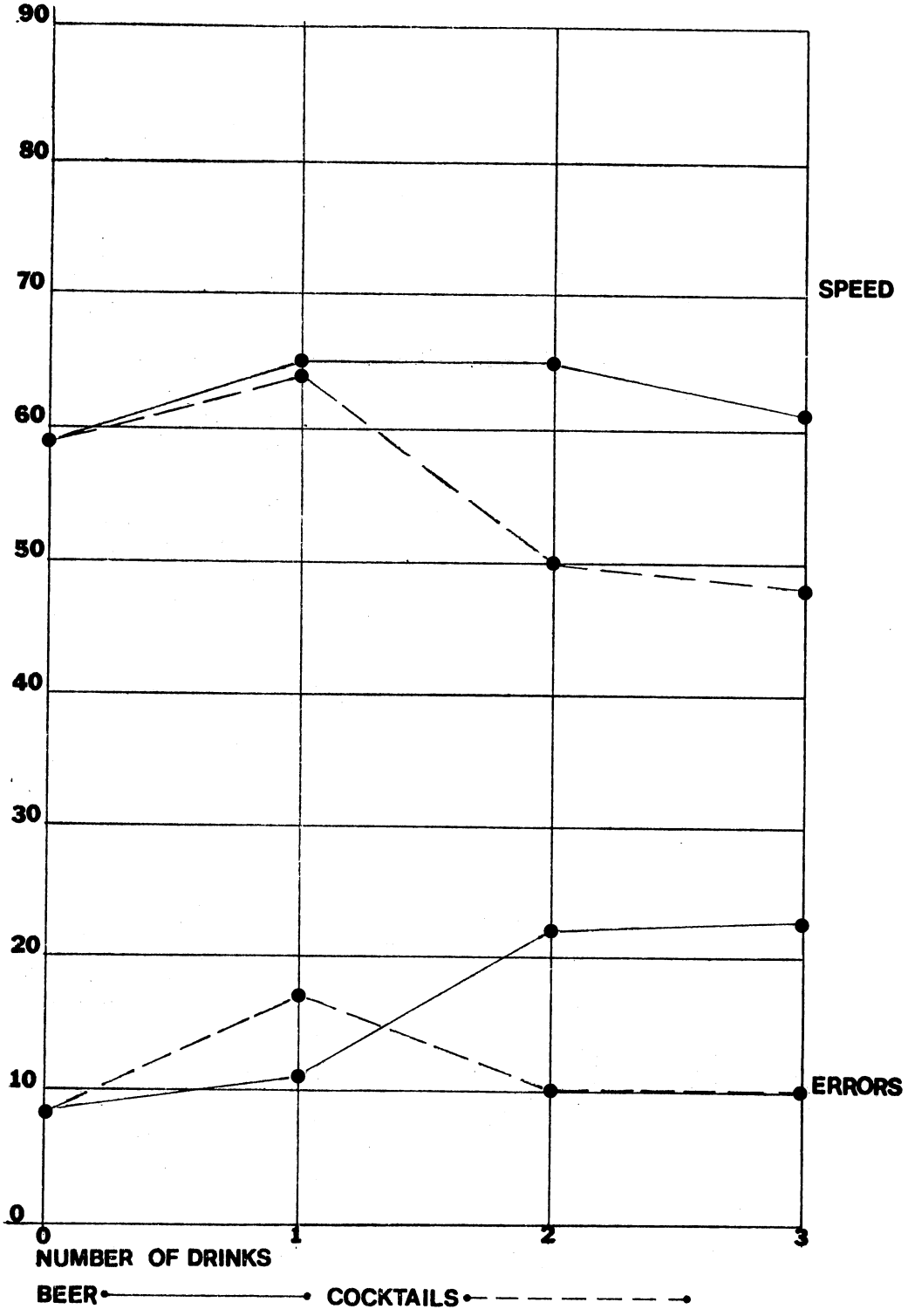

Figure 3. Typewriting Speed and Accuracy of Participant No. 3

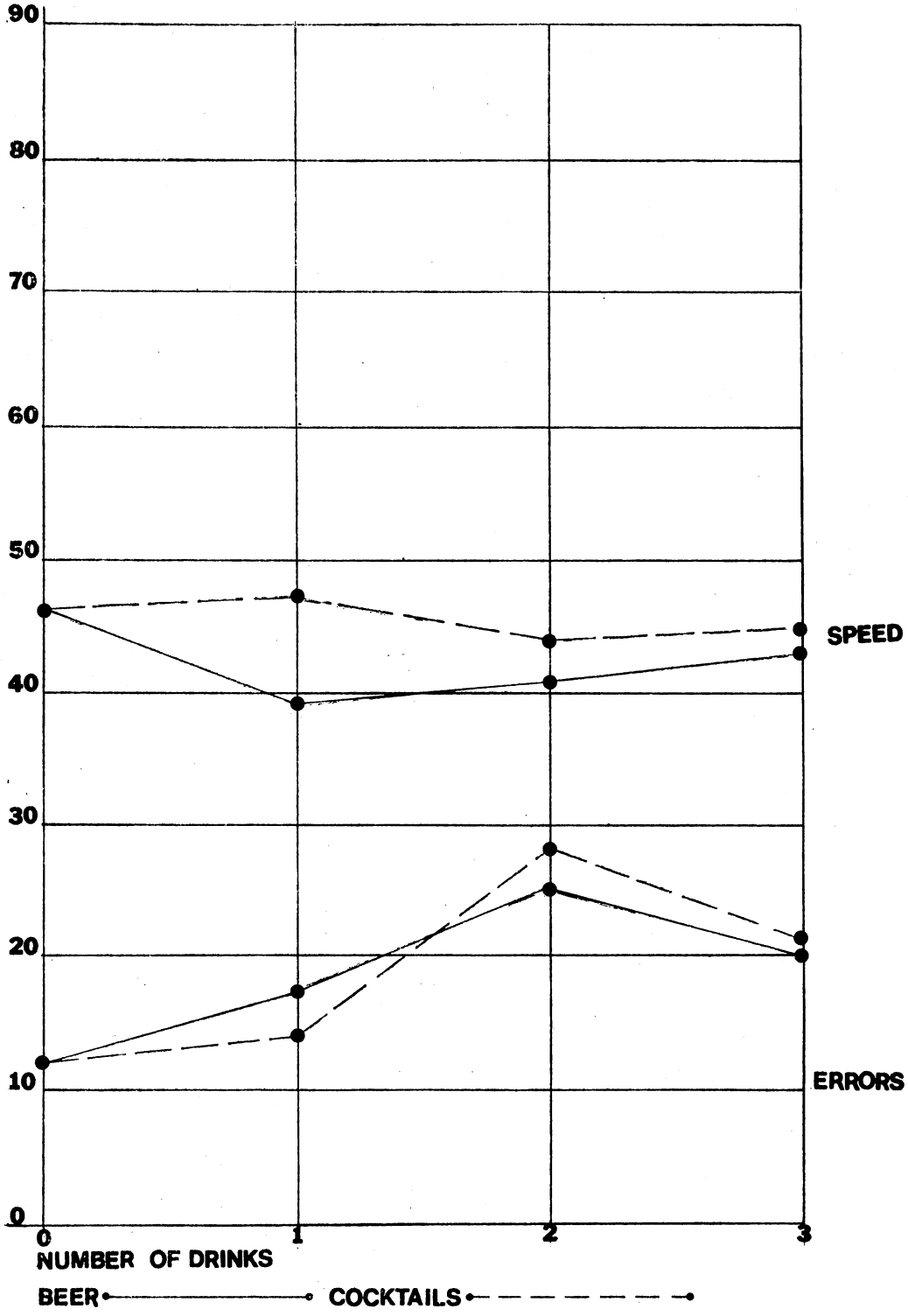

Figure 4. Typewriting Speed and Accuracy of Participant No. 4

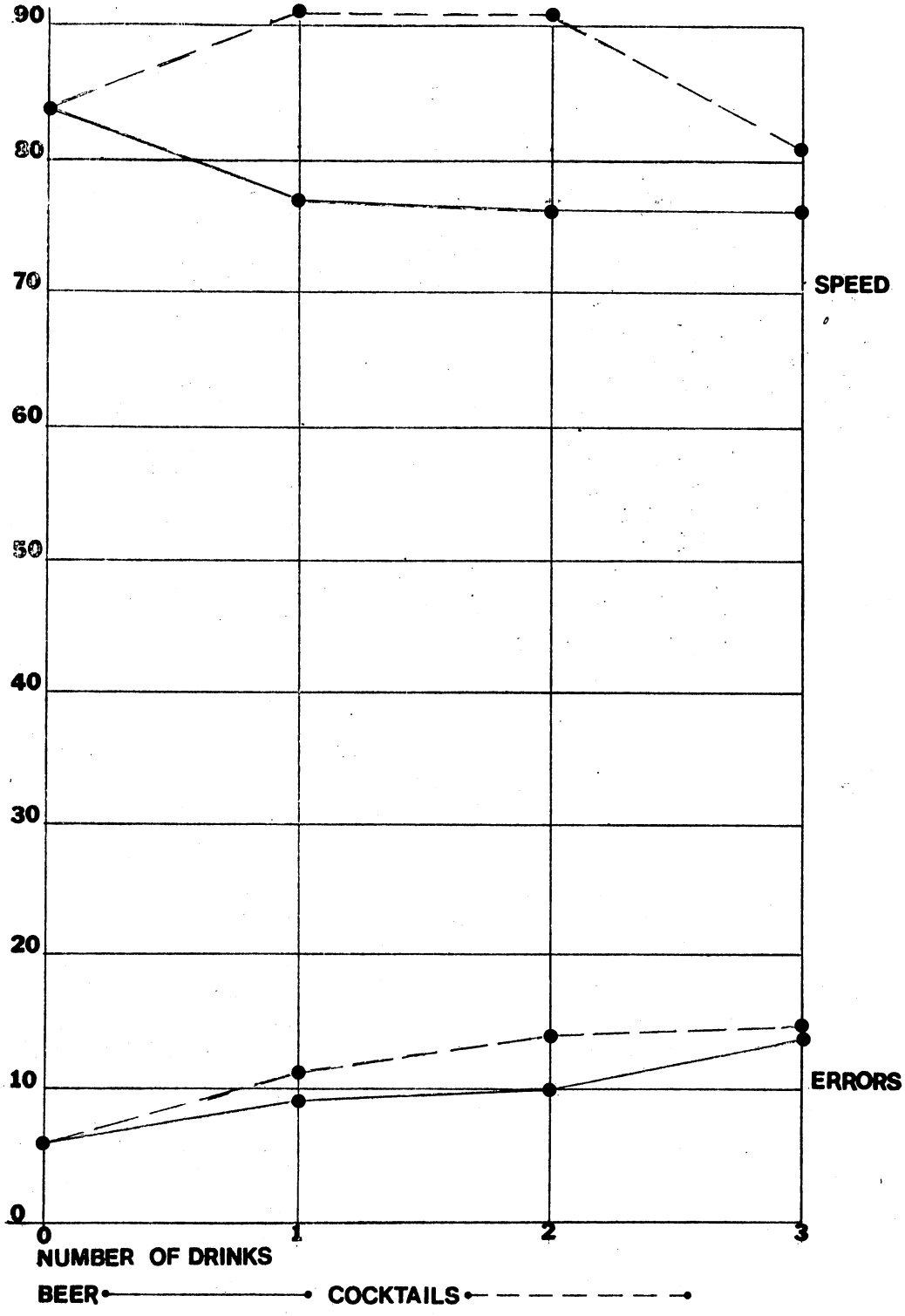

Figure 5. Typewriting Speed and Accuracy of Participant No. 5

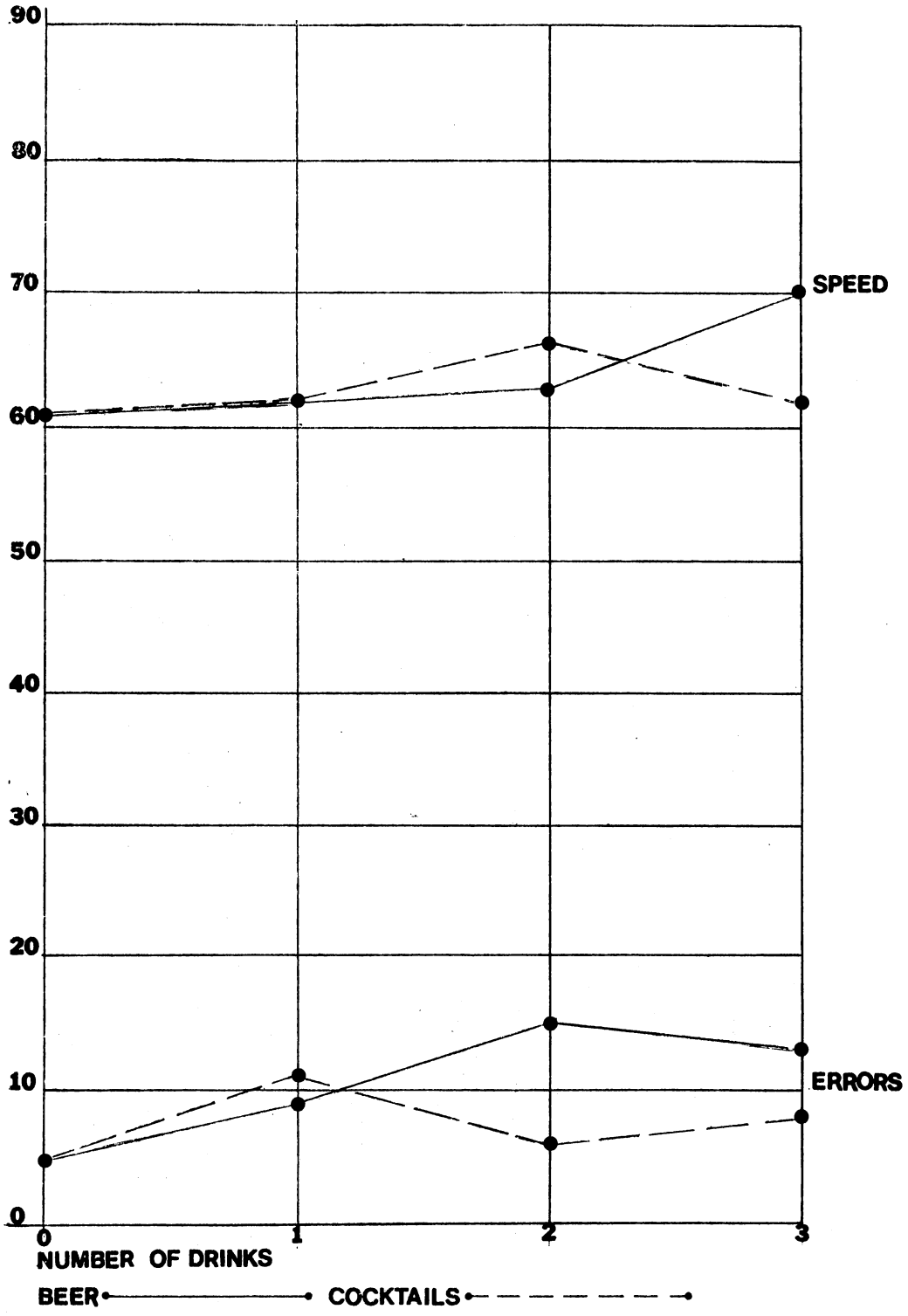

Figure 6. Typewriting Speed and Accuracy of Participant No. 6

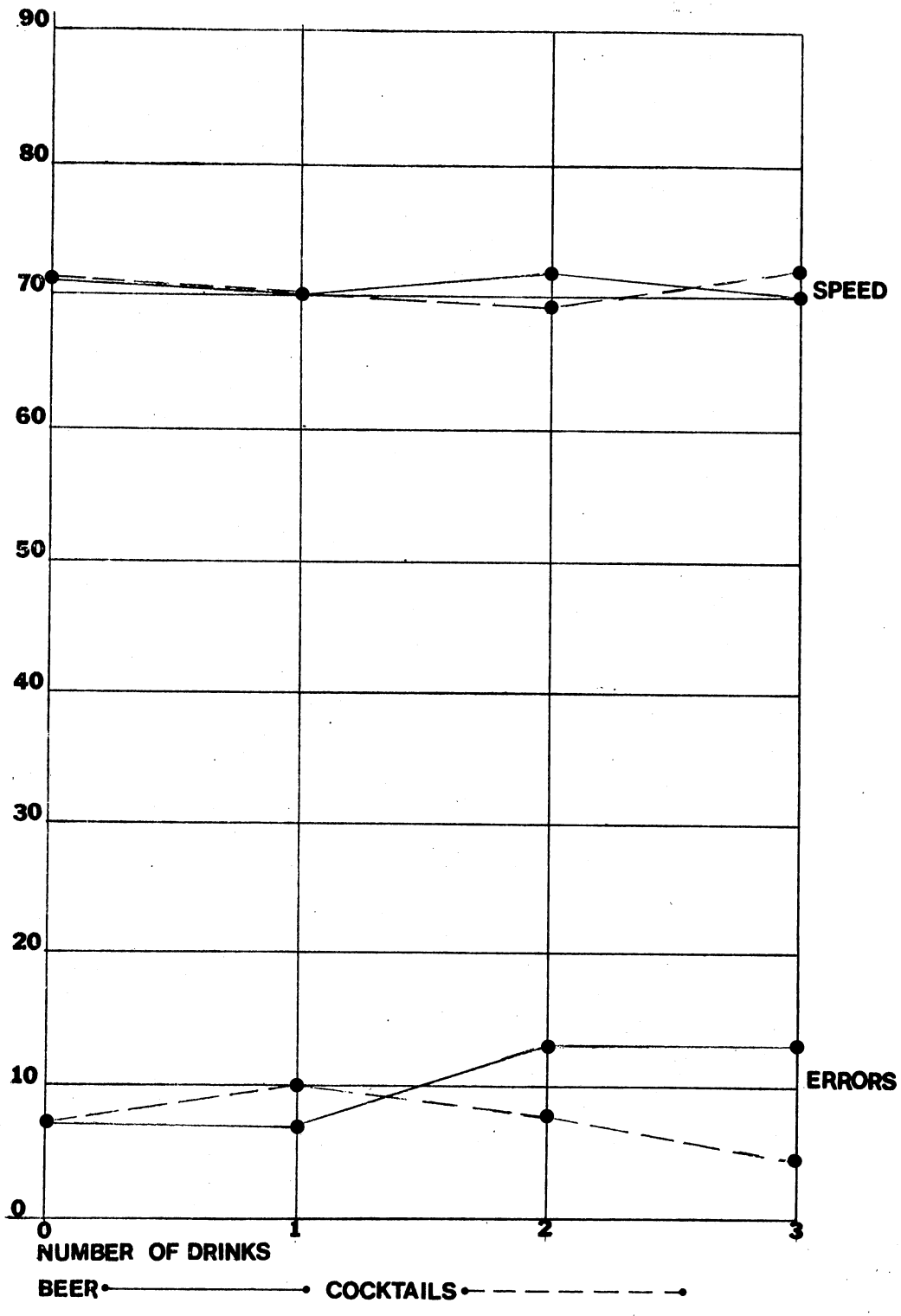

Figure 7. Typewriting Speed and Accuracy of Participant No. 7

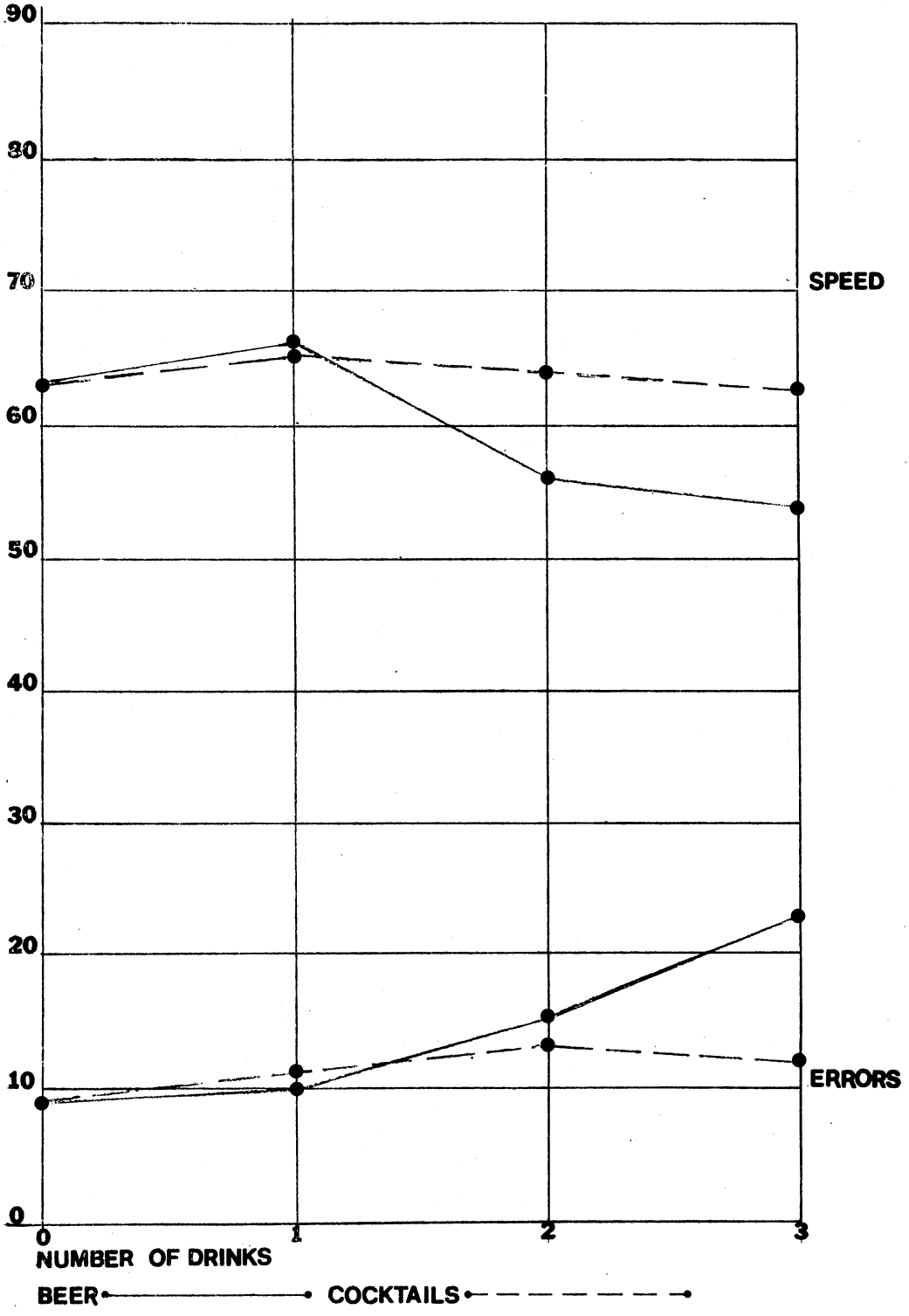

Figure 8. Typewriting Speed and Accuracy of Participant No. 8

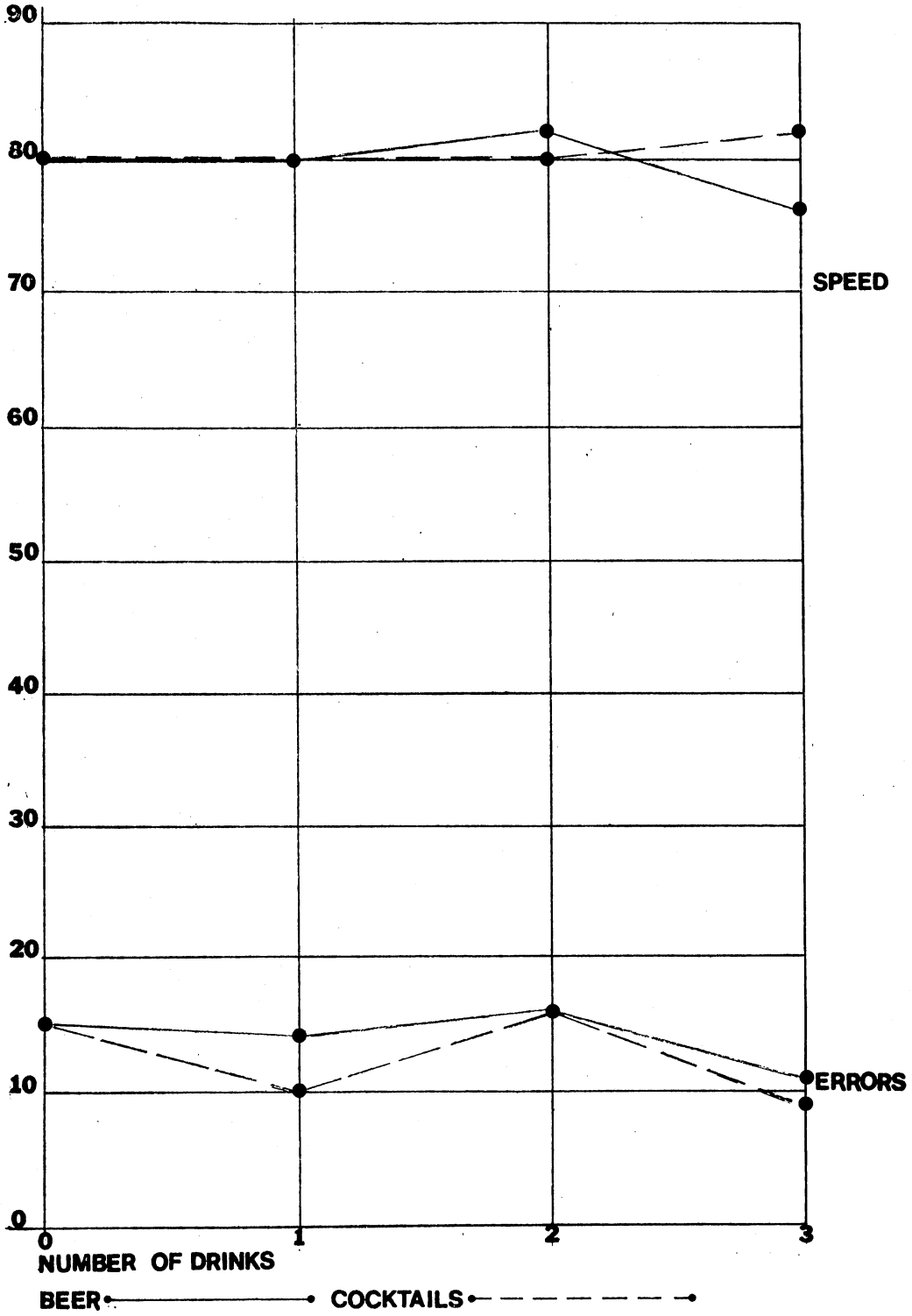

Figure 9. Typewriting Speed and Accuracy of Participant No. 9

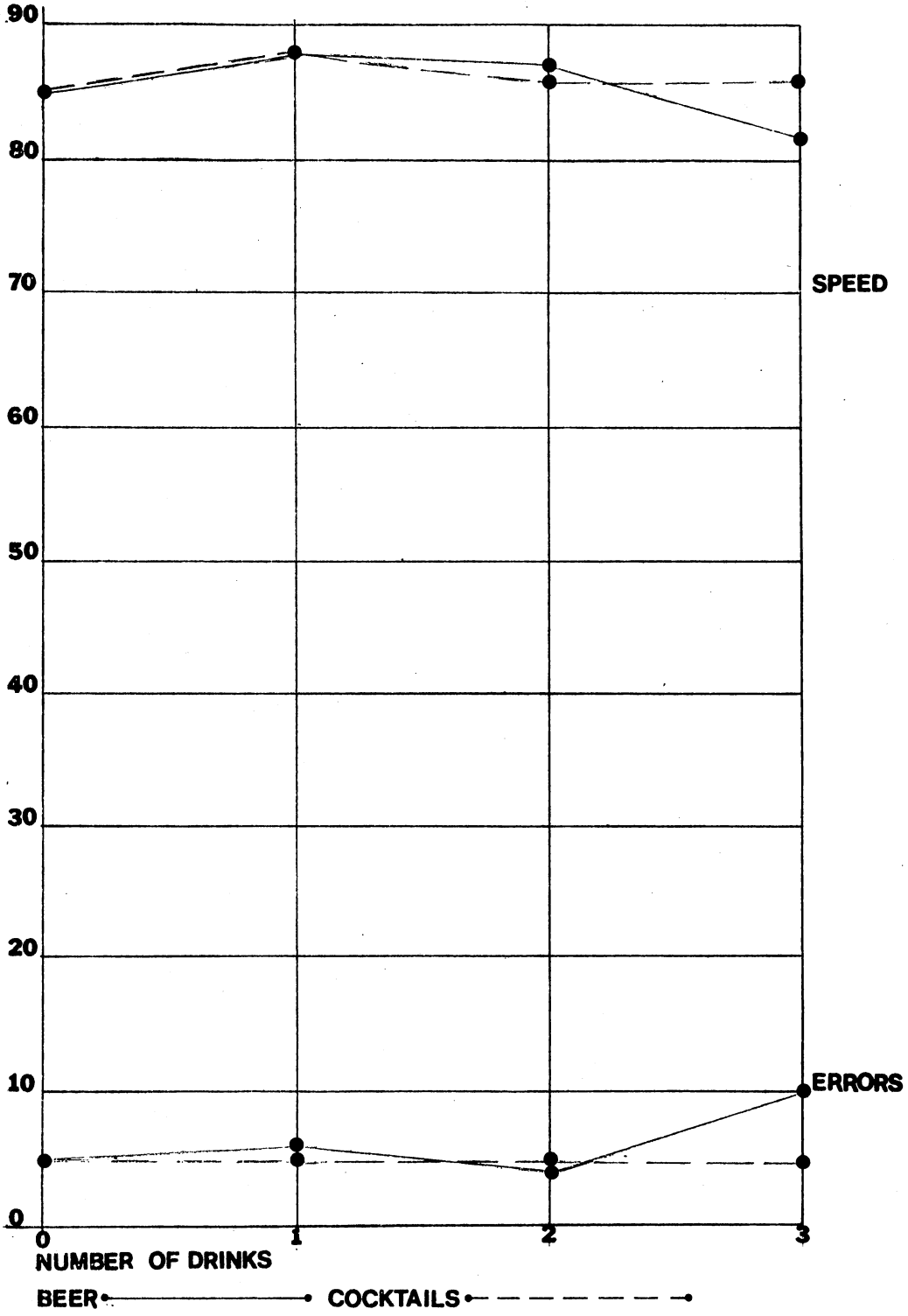

Figure 10. Typewriting Speed and Accuracy of Participant No. 10

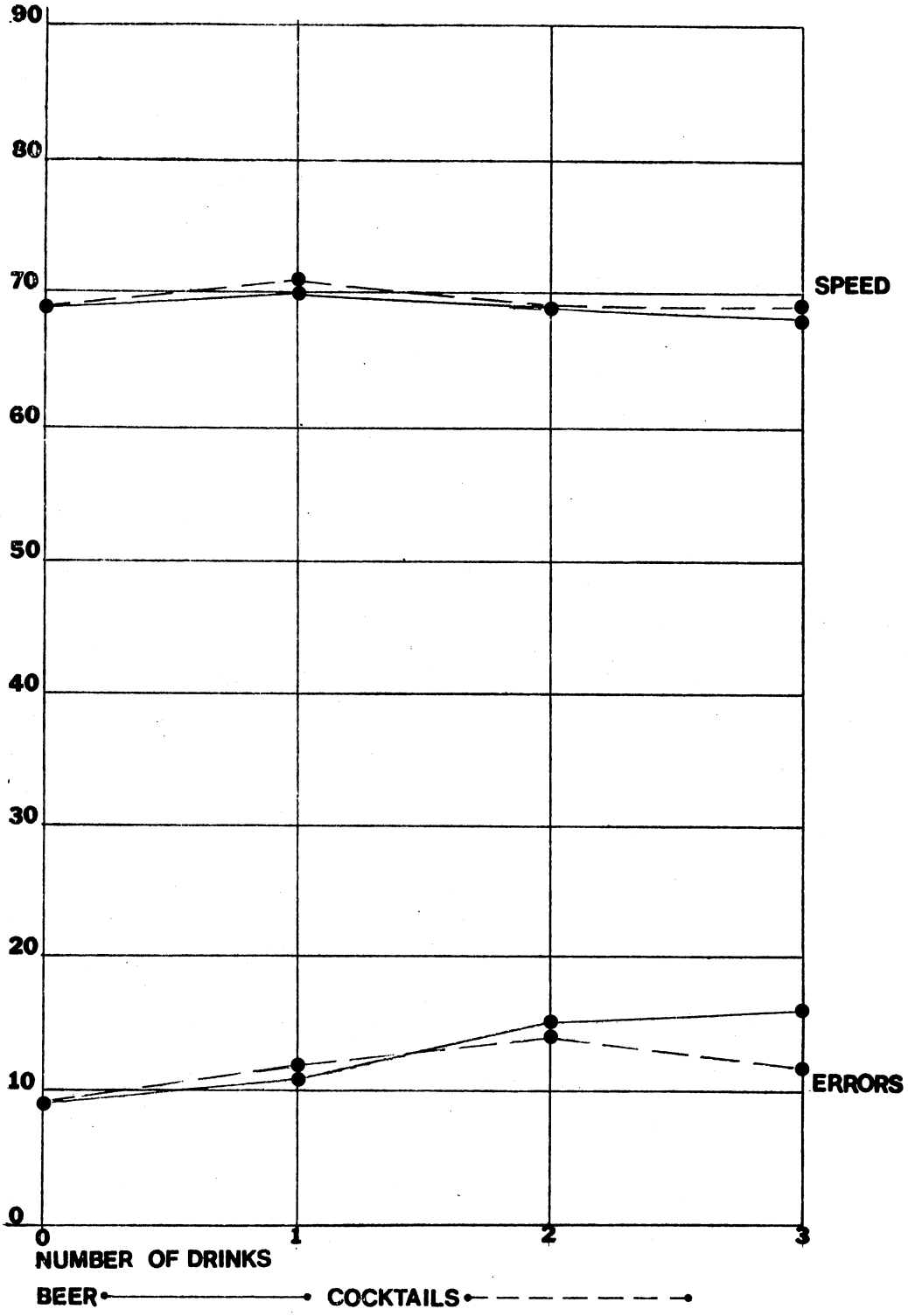

Figure 11. Group Average Typewriting Speed and Accuracy

of the ten participants increased their speed after drinking two beers for an average speed increase of .30 words per minute. After consuming three beers, only three of the ten participants increased their speed, thus giving an average speed decrease of 1.35 words per minute.

After consuming cocktails, nine of the ten participants increased their speed, giving an average speed increase of 2.00 words per minute. Six of the ten participants increased their speed with two cocktails, giving an average speed increase of 0 words per minute. For three cocktails, again six of the ten participants increased their speed, but the average is a decrease in speed of .05 words per minute.

Thus, it can be concluded that on the average, typewriting speed did increase with one and two beers, and with one cocktail. On the average speed stayed the same when two cocktails were consumed and decreased with three beers and three cocktails, although a majority of the participants increased in speed after three cocktails. Speed decreased more (1.35 words per minute) with the three beers than with the three cocktails (.05 words per minute).

Analysis of Typing Errors

For each typing session, an average error score was obtained for the two timed writings. Each individual's error scores were plotted at the lower portion of Figures 1-10, and the average group error score is plotted on the lower portion of Figure 11. The number of errors made after consuming beer is indicated by the straight line, and the number of errors made after consuming cocktails is indicated by the dotted line.

Eight of the ten participants increased their errors after drinking one beer, for an average increase of 2.40 errors per timed writing. Nine of the ten participants increased their errors after two beers, for an average increase of 6.15 errors per timed writing. Again with three beers, nine of the ten participants increased their errors, for an average increase of 7.85 errors per timed writing.

After consuming one cocktail, eight of the ten participants increased their errors by an average of 3.35 errors per timed writing. Nine of the ten participants increased their errors after two cocktails for an average increase of 5.30 errors per timed writing. After three cocktails, only seven of the ten participants increased their errors for an average increase of 3.95 errors per timed writing.

Therefore, it can be concluded that the average number of errors increased with every alcoholic beverage consumed. The smallest average increase in errors was made after one beer (2.40 error increase per timed writing) and the largest increase in errors (7.85 errors per timed writing) occurred after three beers were consumed. More total errors were made with beer than with cocktails. Furthermore, a majority of the participants made more errors during each of the six sessions after drinking than during the initial session following no alcoholic beverages. It appears that even a small amount of alcoholic beverage causes typing accuracy to decrease.

Analysis of Change in Typewriting Speed and Accuracy

To show the actual speed and errors for each session and the relationship between no alcohol consumption and various amounts of alcohol consumption, a percent increase or decrease change in both

typing speed and accuracy was computed. The results are shown in Tables III-XII. Table XIII then consolidates the ten individual scores into one table showing the group response to alcohol.

With this analysis, each participant increased their speed by 1.06% (or 1.50 words per minute) after one beer. With two beers, each participant increased speed by .07% (or .30 words per minute), while with three beers each participant decreased speed by 1.88% (or 1.35 words per minute). Errors increased 30.26% per person (or 2.40 errors per timed writing) for one beer; 80.32% per person (or 6.15 errors per timed writing) for two beers; and 109.71% per person (or 7.85 errors per timed writing) for three beers.

After consuming one cocktail, participants increased typing speed by an average of 2.97% per person (or 2.00 words per minute). Speed decreased after two cocktails by an average of .04% per person (or 0 words per minute change). After three cocktails, participants decreased speed by an average of .03% (or decrease of .05 words per timed writing). Errors increased following one cocktail by an average of 55.42% per person (or 3.35 errors per timed writing); and following two cocktails, errors increased by an average of 64.10% per person (or 5.30 errors per timed writing). After three cocktails, errors increased by an average of 55.83% (or 3.95 errors per timed writing).

It can be concluded, therefore, that participants averaged an increase in typing speed with one and two beers and with one cocktail. Speed decreased following three beers and two and three cocktails. Errors increased after one, two, and three beers by an average of 30.26%, 80.32%, and 109.71% respectively. With cocktails, errors increased by an average of 55.42% after one cocktail, 64.10% after

TABLE III

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 1

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	73.0		
Errors	6.0		
1 Beer			
Speed	75.0	+ 2.0	+ 2.73
Errors	8.0	+ 2.0	+ 33.33
2 Beers			
Speed	75.0	+ 2.0	+ 2.73
Errors	13.0	+ 7.0	+116.66
3 Beers			
Speed	72.5	- .5	- .68
Errors	18.0	+12.0	+200.00
1 Cocktail			
Speed	74.0	+ 1.0	+ 1.96
Errors	17.5	+11.5	+191.66
2 Cocktails			
Speed	74.0	+ 1.0	+ 1.36
Errors	17.5	+11.5	+191.66
3 Cocktails			
Speed	78.5	+ 5.5	+ 7.53
Errors	17.5	+11.5	+191.66

TABLE IV

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 2

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	70.0		
Errors	15.5		
1 Beer			
Speed	71.5	+ 1.5	+ 2.14
Errors	22.0	+ 6.5	+ 41.93
2 Beers			
Speed	69.0	- 1.0	- 1.42
Errors	17.0	+ 1.5	+ 9.67
3 Beers			
Speed	64.5	- 5.5	- 7.85
Errors	21.0	+ 5.5	+ 35.48
1 Cocktail			
Speed	71.0	+ 1.0	+ 1.42
Errors	15.0	- .5	- 3.22
2 Cocktails			
Speed	70.0	0	0
Errors	18.5	+ 3.0	+ 19.35
3 Cocktails			
Speed	73.5	+ 3.5	+ 5.00
Errors	19.5	+ 4.0	+ 25.80

TABLE V

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 3

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	59.5		
Errors	8.5		
1 Beer			
Speed	65.5	+ 6.0	+ 10.08
Errors	11.0	+ 2.5	+ 29.41
2 Beers			
Speed	65.0	+ 5.5	+ 9.24
Errors	22.5	+14.0	+164.70
3 Beers			
Speed	61.5	+ 2.0	+ 3.36
Errors	23.5	+15.0	+176.47
1 Cocktail			
Speed	64.5	+ 5.0	+ 8.40
Errors	17.5	+ 9.0	+105.88
2 Cocktails			
Speed	50.0	- 9.5	- 15.96
Errors	15.5	+ 7.0	+ 82.35
3 Cocktails			
Speed	48.5	-11.0	- 18.48
Errors	15.5	+ 7.0	+ 82.35

TABLE VI

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 4

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	46.0		
Errors	12.5		
1 Beer			
Speed	39.0	- 7.0	- 15.21
Errors	17.0	+ 4.5	+ 36.00
2 Beers			
Speed	41.5	- 4.5	- 9.78
Errors	25.0	+12.5	+100.00
3 Beers			
Speed	43.0	- 3.0	- 6.52
Errors	20.0	+ 7.5	+ 60.00
1 Cocktail			
Speed	47.5	+ 1.5	+ 3.26
Errors	14.5	+ 2.0	+ 16.00
2 Cocktails			
Speed	44.5	- 1.5	- 3.26
Errors	28.5	+16.0	+128.00
3 Cocktails			
Speed	45.5	- .5	- 1.08
Errors	21.5	+ 9.0	+ 72.00

TABLE VII

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 5

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	86.0		
Errors	6.0		
1 Beer			
Speed	87.5	+ 1.5	+ 1.74
Errors	9.0	+ 3.0	+ 50.00
2 Beers			
Speed	86.0	0	0
Errors	10.0	+ 4.0	+ 66.66
3 Beers			
Speed	86.5	+ .5	+ .58
Errors	14.5	+ 8.5	+141.66
1 Cocktail			
Speed	91.5	+ 5.5	+ 6.39
Errors	11.5	+ 5.5	+ 91.66
2 Cocktails			
Speed	91.0	+ 5.0	+ 5.81
Errors	14.0	+ 8.0	+133.33
3 Cocktails			
Speed	81.5	- 4.5	- 5.23
Errors	15.5	+ 9.5	+158.33

TABLE VIII

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 6

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	61.0		
Errors	5.0		
1 Beer			
Speed	62.5	+ 1.5	+ 2.46
Errors	9.0	+ 4.0	+ 80.00
2 Beers			
Speed	63.5	+ 2.5	+ 4.09
Errors	15.0	+10.0	+200.00
3 Beers			
Speed	70.5	+ 9.5	+ 15.57
Errors	13.5	+ 8.5	+170.00
1 Cocktail			
Speed	62.5	+ 1.5	+ 2.46
Errors	11.0	+ 6.0	+120.00
2 Cocktails			
Speed	66.0	+ 5.0	+ 8.19
Errors	6.0	+ 1.0	+ 20.00
3 Cocktails			
Speed	62.5	+ 1.5	+ 2.46
Errors	8.0	+ 3.0	+ 60.00

TABLE IX

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 7

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	71.5		
Errors	7.0		
1 Beer			
Speed	70.5	- 1.0	- 1.39
Errors	7.0	0	0
2 Beers			
Speed	73.5	+ 2.0	+ 2.79
Errors	13.0	+ 6.0	+ 85.71
3 Beers			
Speed	70.5	0	0
Errors	13.5	+ 6.5	+ 92.85
1 Cocktail			
Speed	70.0	- .5	- .07
Errors	10.0	+ 3.0	+ 42.85
2 Cocktails			
Speed	69.0	- 2.5	- 3.49
Errors	8.0	+ 1.0	+ 14.28
3 Cocktails			
Speed	72.0	+ 1.5	+ 2.09
Errors	5.5	- 1.5	- 21.42

TABLE X

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 8

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	63.5		
Errors	9.5		
1 Beer			
Speed	66.0	+ 2.5	+ 3.93
Errors	10.0	+ .5	+ 5.26
2 Beers			
Speed	56.0	- 7.5	- 11.81
Errors	15.5	+ 6.0	+ 63.15
3 Beers			
Speed	54.5	- 9.0	- 14.17
Errors	23.5	+14.0	+147.36
1 Cocktail			
Speed	65.0	+ 1.5	+ 2.36
Errors	11.5	+ 2.0	+ 21.05
2 Cocktails			
Speed	64.5	+ 1.0	+ 1.57
Errors	13.5	+ 4.0	+ 42.10
3 Cocktails			
Speed	63.5	0	0
Errors	12.0	+ 2.5	+ 26.31

TABLE XI

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 9

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	80.0		
Errors	15.0		
1 Beer			
Speed	80.5	+ .5	+ .62
Errors	14.5	- .5	- 3.33
2 Beers			
Speed	82.5	+ 2.5	+ 3.12
Errors	16.0	+ 1.0	+ 6.66
3 Beers			
Speed	76.0	- 4.0	- 5.00
Errors	11.0	- 4.0	- 26.66
1 Cocktail			
Speed	80.5	+ .5	+ .62
Errors	10.0	- 5.0	- 33.33
2 Cocktails			
Speed	80.5	+ .5	+ .62
Errors	16.5	+ 1.5	+ 10.00
3 Cocktails			
Speed	82.5	+ 2.5	+ 3.12
Errors	9.5	- 5.5	- 36.66

TABLE XII

CHANGE IN TYPEWRITING SPEED AND ACCURACY
FOR PARTICIPANT 10

		Change in Speed/Errors	Percentage Change
No Alcohol			
Speed	85.5		
Errors	5.0		
1 Beer			
Speed	88.5	+ 3.0	+ 3.50
Errors	6.5	+ 1.5	+ 30.00
2 Beers			
Speed	87.0	+ 1.5	+ 1.75
Errors	4.5	- .5	- 10.00
3 Beers			
Speed	82.0	- 3.5	- 4.09
Errors	10.0	+ 5.0	+100.00
1 Cocktail			
Speed	88.5	+ 3.0	+ 3.50
Errors	5.5	+ .5	+ 10.00
2 Cocktails			
Speed	86.5	+ 1.0	+ 1.16
Errors	5.0	0	0
3 Cocktails			
Speed	86.5	+ 1.0	+ 1.16
Errors	5.0	0	0

TABLE XIII

GROUP AVERAGE CHANGE IN TYPEWRITING SPEED AND ACCURACY

	Average Change in Speed/Errors Per Person	Average Percentage Change Per Person
No Alcohol		
Speed		
Errors		
1 Beer		
Speed	+ 1.50	+ 1.06
Errors	+ 2.40	+ 30.26
2 Beers		
Speed	+ .30	+ .07
Errors	+ 6.15	+ 80.32
3 Beers		
Speed	- 1.35	- 1.88
Errors	+ 7.85	+109.71
1 Cocktail		
Speed	+ 2.00	+ 2.97
Errors	+ 3.35	+ 55.42
2 Cocktails		
Speed	0	- .04
Errors	+ 5.30	+ 64.10
3 Cocktails		
Speed	- .05	- .03
Errors	+ 3.95	+ 55.83

two cocktails, and 55.83% after three cocktails.

Therefore, it may be concluded that typewriting errors increase after the consumption of alcoholic beverages while typewriting speed increases after a small quantity (one or two beverages) of alcoholic beverage is consumed. After the consumption of a greater quantity (three beverages), typewriting speed decreases.

Analysis of Beer vs. Cocktails

Even though twelve ounces of beer and one ounce of 100 proof vodka (with two ounces of orange juice) should produce about the same effects, the results were not similar in most of the cases. Possible reasons for the difference are shown under the section "Analysis of Questionnaire," page 55.

To determine whether participants performed better after consuming beer or cocktails, the changes in speed/errors per person (see middle column of Table XIII, page 53) were averaged to get one speed score and one error score for the sessions after which beer was consumed. After beer was consumed the average group speed increased by .45 words per minute, and the average increase in number of errors made was 5.46 per timed writing.

After cocktails, the average group speed increase was 1.95 words per minute, and the group average increase in number of errors made was 4.20 errors per timed writing.

It can be concluded that on the average, participants increased their speed 1.50 words per minute (1.95 words per minute with cocktails minus .45 words per minute with beer) more per minute after cocktails were consumed than after beer was consumed. Errors increased

1.27 errors (5.45 error increase with beer minus 4.20 error increase with cocktails) per timed writing more after beer was consumed than after cocktails were consumed. Therefore, on the average, participants typed faster and with fewer errors when cocktails were consumed than when beer was consumed. Typewriting skill seems to be higher after cocktails are consumed than after beer is consumed.

Analysis of Questionnaire

Seven of the ten participants preferred drinking cocktails to beer and felt their typing performance was better when cocktails were consumed than when beer was consumed. Participants thought the difference between beer and cocktails was in the volume consumed. Only nine ounces of liquid was consumed in three cocktails whereas 36 ounces of liquid was consumed in three beers.

All participants felt that consuming three beers was more difficult and more filling than consuming three cocktails. Therefore, because of the "full" feeling of beer, sleepiness may have resulted in poorer typing performance.

All participants felt that alcohol did impair typing performance, at least when three drinks were consumed for lunch. Some of the reasons for poorer typing performance included: less attentive, too relaxed, losing place on page, tiredness, and duller senses.

Summary

Participants increased typing speed by an average of 1.06% (or 1.50 words per minute) after one beer. After two beers, participants increased speed by an average of .07% (or .30 words per minute), while

after three beers participants decreased speed by an average of 1.88% (or 1.35 words per minute). Errors increased on the average of 30.26% per person (or 2.40 errors per timed writing) after one beer; 80.32% per person (or 6.15 errors per timed writing) after two beers; and 109.71% per person (or 7.85 errors per timed writing) after three beers.

After consuming cocktails, participants increased typing speed by an average of 2.97% per person (or 2.00 words per minute) after one cocktail. Speed decreased with two cocktails by an average of .04% per person (0 words per minute change). After three cocktails, participants decreased speed by an average of .03% (or .05 words per timed writing). Errors increased with one cocktail by an average of 55.42% per person (or 3.35 errors per timed writing); and with two cocktails, errors increased 64.10% per person (or 5.30 errors per timed writing). For three cocktails, errors increased by 55.83% (or 3.95 errors per timed writing).

Seven of the ten participants indicated that they preferred drinking cocktails to beer. On the average, participants increased speed and decreased errors more with cocktails than with beer.

CHAPTER V

Summary, Conclusions, and Recommendations

Purpose of the Study

The purpose of this research was to determine what differences, if any, would occur in typing performance after participants had consumed one, two, and three cocktails for lunch. Each participant's typewriting performance was measured by averaging the scores on two five-minute timed writings given within thirty minutes after lunch ended.

Description of the Sample

The sample consisted of ten people (nine female and one male) who either were employed as an office worker on campus or were students or faculty in the College of Business Administration. All participants had the equivalent of at least one year of typing instruction.

Findings

Participants averaged a speed increase of 1.06% (or 1.50 words per minute) after one beer; a speed increase of .07% (or .30 words per minute) after two beers; and a speed decrease of 1.88% (or 1.35 words per minute) after three beers. Average errors increased 30.26% per person (or 2.40 errors per timed writing) after one beer; 80.32% per person (or 6.15 errors per timed writing) after two beers; and 109.71%

per person (or 7.85 errors per timed writing) after three beers.

After consuming cocktails, participants averaged a speed increase of 2.97% per person (or 2.00 words per minute) after one cocktail. Speed decreased with two cocktails by .04% per person (or 0 word per minute change). For three cocktails, participants decreased in speed by an average of .03% per person (or .05 words per minute). Errors increased with one cocktail by an average of 55.42% per person (or 3.35 errors per timed writing); with two cocktails, errors increased by an average of 64.10% per person (or 5.30 errors per timed writing). For three cocktails, errors increased by an average of 55.83% per person (or 3.95 errors per timed writing).

Seven of the ten participants preferred drinking cocktails to beer. On the average, participants increased their speed more with cocktails than with beer, and more errors were made when beer was consumed than when cocktails were consumed.

Conclusions

From the results of this study it appears that:

(1) The consumption of one or two beers or one cocktail for lunch caused typewriting speed to increase.

(2) The consumption of three beers or two or three cocktails caused typewriting speed to decrease.

(3) The consumption of one, two, or three beers, or one, two, or three cocktails caused typewriting errors to increase.

(4) All participants found three beers to be very filling and difficult to drink in a one-hour lunch period.

(5) Seven out of the ten participants preferred drinking cocktails to drinking beer.

(6) On the average, participants typed faster and with fewer errors when cocktails were consumed than when beer was consumed.

(7) All participants felt that alcohol did impair typing performance at least when three drinks were consumed for lunch.

Recommendations

(1) Subjects should be conditioned to taking timed writings before starting the experimentation. Since there was no conditioning practice before the experimentation, subjects may have become more conditioned to taking timed writings, and typing may have improved during the course of the experimentation.

(2) The average increase or decrease in typing performance after various amounts of alcohol cannot be applied to the general population because volunteers were somewhat conditioned to drinking--no "first-time drinkers" volunteered for the experimentation.

(3) Timed writings could be administered as often as every half hour or every hour in the afternoon to see how long typing performance is affected by alcohol.

(4) Further research with a larger sample should be conducted to see if like results would be obtained from other samples.

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APPENDIX

Questionnaire

Did you notice a difference in your typing ability after drinking beer? What?_____

_____

_____

_____

Did you notice a difference in your typing ability after drinking cocktails? What?_____

_____

_____

_____

Do you feel you performed best after drinking beer or after drinking cocktails?_____

If you worked in an office and consumed the amount of beer and cocktails at noon that you did in the experiment, do you think this would affect your afternoon performance in the office? How?_____

_____

_____

_____

VITA

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Master of Science

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