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THE CORNELL INDEX AS A PREDICTOR OF ADJUSTMENT
AT LONDON CORRECTIONAL INSTITUTION, LONDON, OHIO

Mark A. Pinti

James A. Jones

Wright State University

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TABLE OF CONTENTS

	Page
ABSTRACT	1
INTRODUCTION	2
THE NATURE OF THE PROBLEM	4
REVIEW OF RELATED LITERATURE	4
METHODOLOGY	7
SUBJECTS	7
INSTRUMENTATION	8
ADMINISTRATION	8
SCORING	8
DATA REGARDING DISCIPLINARY BOARD	8
DISCIPLINARY INDEX	9
RESULTS	9
DISTRIBUTION OF RAW SCORES ON THE CORNELL INDEX	9
DISTRIBUTION OF DISCIPLINARY INDEX SCORES	10
STATISTICAL CONSIDERATIONS	10
DISCUSSION	11
REFERENCES	16
TABLE I	19
FIGURE CAPTIONS	20
FIGURE 1	21
FIGURE 2	22

INTRODUCTION

Predicting behavioral adjustment for new residents at a correctional institution is a necessary function of the staff at the institution. A number of placement decisions must be made concerning each resident soon after his arrival at the institution. At the London Correctional Institution (LOCI), London, Ohio, which is a medium security facility, new residents are received each Monday morning from the Reception Center at Chillicothe Correctional Institution (CCI). After a four (4) day orientation period, the new men are screened by the Classification Committee. It is the Classification Committee's responsibility to determine each man's suitability for placement at the medium security level, and then to assign job placements, dormitory assignments, and to make program recommendations to each man. All of these decisions are contingent upon an assessment of each individual's potential behavioral adjustment.

In 1973, when the Reception Center was moved from the Ohio Penitentiary in Columbus to the Chillicothe Correctional Institution, in Chillicothe, Ohio, the screening process at this Reception Center was temporarily suspended. This meant that some men were being transferred to London Correctional Institution before they had been screened psychologically at the Reception Center. As this condition arose, it became incumbent upon the staff of the Office of Psychological Services at LOCI to develop a quick and accurate screening procedure which could be implemented in place of the now suspended screening procedure from the Reception Center.

ABSTRACT

The usefulness of the Cornell Index (N2) as an aid in predicting prison adjustment was investigated. Prison adjustment was measured on the basis of rule violations per unit of time. The adjustment and Cornell Index score of 524 adult male convicts were gathered. Using the median test and the Kruskal-Wallis one way analysis of variance techniques the .05 and .001 levels of significance respectively were reached. The Cornell Index was found to be a significant aid in discriminating between non-violators and infrequent violators on one hand and frequent violators on the other.

There are several factors which had to be considered in choosing the appropriate screening instruments. The most obvious factor was time. New men arrive at LOCI on Monday and are seen by the Classification Committee on Thursday afternoon and Friday morning. With an average load of 30 men per week arriving at LOCI, it was impossible to administer a full battery of tests, including a clinical interview with each man. The staff of the Office of Psychological Services at LOCI numbers only four diagnosticians, and even if they suspended all of their other routine activities, they could not test, interview, and evaluate 30 men per week.

Therefore, it became a necessity to find an instrument which could be administered to a large group of men simultaneously, scored quickly, and provide a fairly accurate prediction of behavioral adjustment. The Minnesota Multiphasic Personality Inventory was rejected because it was too long. The Edwards Personal Preference Schedule, the California Psychological Inventory, and other similarly lengthy instruments were also rejected.

The test which was eventually selected by the staff of the Psychology Department was the Cornell Index, Form N2. The Cornell Index possessed the characteristics for which the staff was looking. Containing 101 true-false items, it could be administered to a large group of individuals simultaneously. A group of 30 men can be tested in approximately 45 minutes. Scoring can be done quickly and manually. The Cornell Index

purports to identify the characteristics which are helpful in making predictions about potential psychiatric and psychosomatic problems.

The Cornell Index, Form N2 is a revision of the Cornell Selectee Index, which was used for military screening in World War II. The Manual for the Cornell Index claims: "The earlier form was subjected to experimental study and found to agree very closely with the judgements of psychiatrists in induction centers. Somewhat longer than Form N, Form N2 seems to be statistically more reliable and makes more items of information available to the psychologist or psychiatrist for further inquiry and clinical interpretation."

The Cornell Index should not be used as a diagnostic instrument. It should be used only to identify potential problems. It is then the responsibility of the diagnostician to follow up on these potential problems.

The need has been felt for an instrument for the rapid psychiatric and psychosomatic evaluation of large numbers of persons in a variety of situations. The Cornell Index was assembled as a series of questions referring to neuropsychiatric and psychosomatic symptoms, which would serve as a standardized psychiatric history and a guide to the interview, and, in addition, would statistically differentiate

persons with serious personal and psychosomatic disturbances from the rest of the population. It was devised as an adjunct to the interview, not as a substitute unless an interview is impractical.

(Weider, Wolff, Brodman, Mittlemann, Wechsler)

The Nature of the Problem. Since March, 1973, all new residents arriving at LOCI from the Reception Center at CCI have been given the Cornell Index, Form N2. The Cornell Index is administered as a quick screening instrument to help identify potential adjustment difficulties. Using the Cornell Index and all other available information (e.g. old evaluations, recent personality testing), the staff of the Office of Psychological Services attempts to identify individuals who may be potential behavior problems.

It is the purpose of this study to attempt to determine if the Cornell Index, Form N2 is an effective tool in making predictions of behavioral adjustment at LOCI. If it can be determined empirically that the Cornell Index does identify potential problem individuals, then its use can be justified. If no proof can be made, its usefulness must be questioned.

REVIEW OF RELATED LITERATURE

In searching for publications involving the Cornell Index, two things became rapidly apparent: (1) most of the articles are between 20 and 30 years old, and (2) many of them are in

obscure journals not available at the Ohio State University Health Center Library. Notable among the missing articles are several articles in the Annals of the New York Academy of Science and the Journal of War Medicine which appear to be important articles by the authors of the Cornell Index.

In discussing the Cornell Index, Grant commented that physical fitness and intellect are no longer sufficient criteria for selection of industrial personnel. Grant's observation was made before the advent of the booklet form of the MMPI. Elsewhere, the Cornell Index is described as an adjunct to interview, as good as any objective instrument with the advantage of speed and simplicity of scoring (Penwalt). The Cornell Index has also been described as enabling the interviewer to focus on the patient's concerns which he may be reluctant to verbalize (Weider et al 1946).

The original form of the instrument was known as the Cornell Selectee Index and was used in the military setting during World War II (Eysenck). Literature available to this writer contains a variety of application with mixed results. Such divergent applications as the identification of those prone to seasickness (Birren) and the discrimination of patients requiring a long convalescence from those requiring a shorter convalescence (Rodman et al, 1947a). Other applications in the hospital setting have included Geriatrics (Tuckerman et al.). Tuberculosis (Sparen; Wechsberg) Epileptics (Richards), Alcoholics (Manson), and Surgical Patients (Mittlemann et al., 1945a). Other

applications have included screening of a worker in industry (Weider; Mittlemann et al., 1945b). Hanwalt describes the index as an adjunct to the clinical interview, better for use with the general population than with the college graduate.

Commenting on the validity of the index, Hanwalt stated that it was effective in discriminating those with serious personality difficulties from the normal, but not very valid in individual cases. As a caution to test users, the index has been viewed as effective only under conditions where it is to the subject's advantage to report truthfully (Mittlemann et al., 1945b). Wechsberg found that age and score on the Cornell Index are not related and that there was only a low correlation between the length of hospital stay and Cornell Index scores among his group of TB patients. In addition, Wechsberg noted that there was no significant difference in Cornell scores between normal and tubercular groups. He did note however, that the three forms of the index, N1, N2 and N3 were comparable. In another study, significant change in scores were found between successive administration (Kobler). Several of the authors found the Cornell Index to be an adequate measure of personality disturbance and a discriminator between those patients who would be expected to have a short or long convalescence (Brodman et al., 1947b). Birren found the index sufficiently valid to be of value in screening out those severely affected by seasickness. In the study of alcoholics

the Cornell Index was found to be an effective instrument in differentiating between alcoholics and non-alcoholics (Manson). In that same article, the Cornell Index was found to correlate highly with the Manson Evaluation. Birren also noticed that anonymity made no significant difference in Cornell Index scores. In the industrial settings, the Cornell Index was viewed as having questionable validity if the subject felt that a job might be denied based on his performance (Mittlemann et al., 1945b). In sum, the Cornell Index has been found to be of from questionable to moderate validity in discriminating "adjusted" from "non-adjusted" groups and seems to find its greatest usefulness as an adjunct to interviews or other instruments. In addition, it appears to be a relatively short way of compiling comparable data on large groups.

METHODOLOGY

Subjects. The subjects of this investigation were convicted male felons transferred from the Chillicothe Reception Center at Chillicothe Correctional Institution to London Correctional Institution between January 1, 1974 and September 16, 1974. Only a small number of subjects for whom complete data could not be found were omitted. The felons ranged in age from 19 years to 67 years. They were convicted of a wide variety of crimes; the criterion for transfer to London Correctional Institution did not include type of crime committed.

Instrumentation. Instrument used in this investigation was the Cornell Index, Form N2 (Weider, Wolff, et al.). This instrument has been previously discussed in the review of the literature.

Administration. The Cornell Index was administered to each group of newly transferred residents while they were in the receiving area. The administration took place within the first week of arrival at LOCI. A member of the staff of the Office of Psychological Services passed out a copy of the instrument to each subject and asked him to sign his name, institutional number, and the date at the top of the page. The men were then instructed to answer each question by circling either Yes or No. The subjects were informed that the Cornell Index would be used in the initial screening process at the Classification meeting. Individuals who reported having difficulty reading were administered the test orally.

Scoring. The Cornell Index was scored according to the Cornell Index manual and the subscales and total scales were recorded.

Data Regarding Disciplinary Record. Data regarding the subject's disciplinary record and commitment offense were obtained from the files in the office of the Associate Superintendent. This data included the number of rule infractions each individual had incurred since his arrival at LOCI up to the cut-off date, which was February 5, 1975.

Disciplinary Index. Each individual's disciplinary index was determined by obtaining the ratio of his disciplinary infractions to the number of weeks he had been at LOCI. In determining this, the number of disciplinary infractions were subtracted from the number of weeks at LOCI and the result was divided by the number of weeks at LOCI. For example, an individual with no disciplinary violations would have a disciplinary index of one (1) regardless of time spent at LOCI. The individual who spent six (6) months at LOCI with only one disciplinary infraction had the same disciplinary index as an individual who spent one (1) year at LOCI with two (2) disciplinary infractions.

In sum, the following data was collected on all subjects: Serial number, name, number of weeks at LOCI prior to cut-off date of February 5, 1975, nature of incident offense, race, number of disciplinary infractions, disciplinary index, and raw score on the Cornell Index.

RESULTS

Distribution of Raw Scores on the Cornell Index. The distribution of raw scores on the Cornell Index was observed to be markedly skewed to the right with a median of eight, a mode of two, and a range of 0-65 (See figure 1). The arithmetic mean was 11.999. In view of the fact that the distribution was so markedly skewed, it appeared that the median was in this case a more representative measure of the central tendency than either the mean or the mode.

Distribution of Disciplinary Index Scores. The distribution of the disciplinary index scores was even more markedly skewed than the distribution of the raw scores, with over 1/2 of the scores falling at the 1.0 level (See Figure 2). Thus, the mode and the median were at 1.00 while the mean is .9661. This figure represents a rate of disciplinary violations of approximately once every thirty weeks. The mean was misleading in this case as it did not reflect the majority of individuals who were involved in no disciplinary violations. If an arbitrary cut-off is drawn between adjustment and non-adjustment at the level of two violations per year (a disciplinary index of .962) the arithmetic mean was slightly inside the adjusted range.

Statistical Considerations. In view of the nature of the two distributions compared in this investigation, non-parametric methods of statistics were chosen as the best technique for evaluation of the data. However, one parametric technique, the point biserial, was attempted.

The point biserial coefficient of correlation was calculated for the two distributions at five levels of adjustment. The five levels examined were: 0-1 violations per year; 1-2 violations per year; 2-3 violations per year; 3-4 violations per year; and more than 4 violations per year. It had been predicted that the increasing scores on the Cornell Index would predict maladjustment. That is, as the scores on the Cornell Index went up, the disciplinary index would go down. Using 0 to 3 violations per year as the criterion for satisfactory adjustment, the point

biserial coefficient of correlation was significant at the .05 level, point biserial r (525) = .0830, $p < .05$. In other words, if one considered an individual who incurred four or more disciplinary violations within one year as being maladjusted, the Cornell Index proved to be a significant predictor of maladjustment. Coefficients at the other levels were in the predicted directions but did not approach significance as closely as the above level (See Table 1).

A median test was performed on the data using two or fewer disciplinary violations per year as the adjusted condition. In this case, 365 individuals were considered adjusted, 161 not adjusted. The results were found to be significant at the .05 level, chi square (1) = 3.9717, $p < .05$.

The Kruskal-Wallis one way analysis-of-variance was performed on the data in the investigation using two or fewer violations per year as a criterion for adjustment. Using this technique, corrected for ties, the Cornell Index was found to discriminate between adjusted and non-adjusted groups at the .001 level of significance, H (1) = 12.8239, $p < .001$.

DISCUSSION

The Cornell Index is used as an aid in the classification process, not as a labeling tool. At Classification meetings, the subscale scores and individual items may be considered as aids to follow-up interviews. At these Classification meetings the data from several different areas is combined with the

resident's personal presence, and initial decisions are made regarding the types of programming which should be initiated for him while he is incarcerated. In view of the results noted above, it would seem that one is justified in using the Cornell Index as one part of the overall classification process. One possible explanation which might account for the large number of individuals who score high on the Cornell Index but show adequate adjustment is that some forms of maladjustment manifest themselves by withdrawal. This would reduce to some extent the individual's chance of becoming involved in a rule infraction. However, if the individual became so withdrawn that he no longer responded to instructions, he could then be classified as a disciplinary case due to his refusal to work or follow orders of staff members. In addition, rule violations certainly do not always arise out of some psychological maladjustment.

It is noteworthy that the pattern of violations is arranged not in any way resembling a normal distribution. Instead, the data reveals a majority of non-violators, a few occasional violators, and a small number of frequent violators. As noted above, this investigation has shown the Cornell Index to be a significant aid in discriminating non-violators and infrequent violators from relatively frequent violators. This data is useful in the classification process. If a man is classified as a potential behavioral problem it becomes necessary to make certain precautions that this individual is

not placed in a situation where he could act out in a fashion which could have a negative effect on the general population of the prison.

To the casual observer, the list of regulations for inmates at LOCI would seem to point to many more violations than have been observed in this investigation. While this investigation is hampered by the same hinderances as are present in most investigations of law enforcement procedures, it is suspected that the rate of reporting violations is higher inside the prison than in the civilian community. In a sense, the situation existing at LOCI is roughly equivalent to having a policeman on each corner and one in the middle of every block. The data collected in this investigation are however, dependent upon discovery and/or reporting of violations as well as official handling of those rule violations. It has been observed by the writers that some violations, particularly minor violations or first violations are handled unofficially and do not show up in the data collected. In addition, it is suspected that other factors arise in the violation-reporting process. For example, one officer may report acts which another officer would not.

The "disciplinary index" used in this investigation is quite possibly not the best measure of prison adjustment. However, it is both accessible and quantifiable. Other possible measures of adjustment might include work evaluations, program participation, or a judgement by a group of individuals as to

the inmate's adjustment. In addition, disciplinary infractions could be handled in a more complicated fashion that would discriminate between serious and minor violations. However, this system would be rather subjective. In addition, it may be possible to split rule violations into three areas: violations between residents, such as fighting; violations of published rules, such as possession of too many cigarettes; and violations directed against staff members, such as disobedience of direct orders. In the preceeding systems, a judge or judges would probably have to be utilized to classify violations as subjective factors would enter into the picture.

In addition, it might be possible to check individual "sick call" cards and quantify their adjustment in that particular area. Presently, the medical department works closely with the psychology department in referring individuals who might need psychological attention. Although these referrals are relatively infrequent compared to the total population, a log might be kept and the Cornell Index scores' referees compared to those of non-referees.

It would appear that some other measure is needed which has reasonable accessibility and quantifiability and is distributed differently from the "disciplinary index" as that measure contains over one-half of the sample at the same level. Since the overwhelming majority of the individuals included

in the study have fallen in the adjusted category, two conclusions can be made. Either the majority of individuals who are incarcerated at the London Correctional Institution are adequately adjusted behavior-wise, or the measures which this study has used to indicate adjustment versus non-adjustment are inadequate. Since institutional adjustment is a subjective concept, it would appear that the factors used to measure adjustment in this study have been adequate for the purposes of the study.

Further possible inquiry might include investigation of relationships, such as that between type of offense and adjustment versus non-adjustment, Cornell Index scores versus nature of criminal offense, racial group versus Cornell score, racial group versus type of offense and racial group versus adjustment.

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The Cornell Index

19

TABLE 1

Point Bi-Serial Coefficients of Correlation

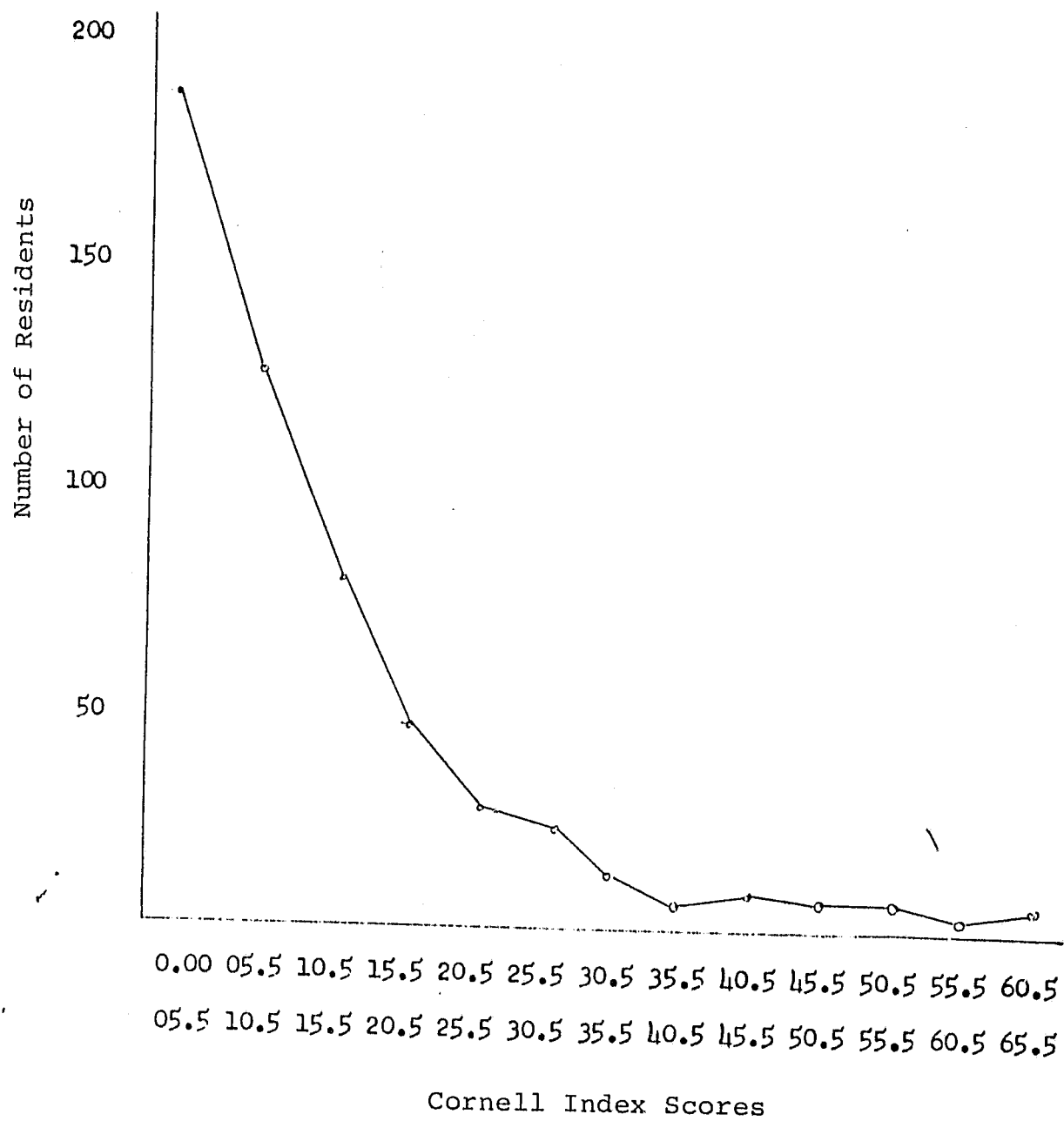
Condition	Adjusted Interval on DI	n	Not adjusted Interval on DI	n	\bar{r}
1	1 thru .981	294	DI < .981	232	.0606
2	1 thru .962	365	DI < .962	161	.0690
3	1 thru .942	423	DI < .942	103	.0830*
4	1 thru .923	454	DI < .923	72	.0488

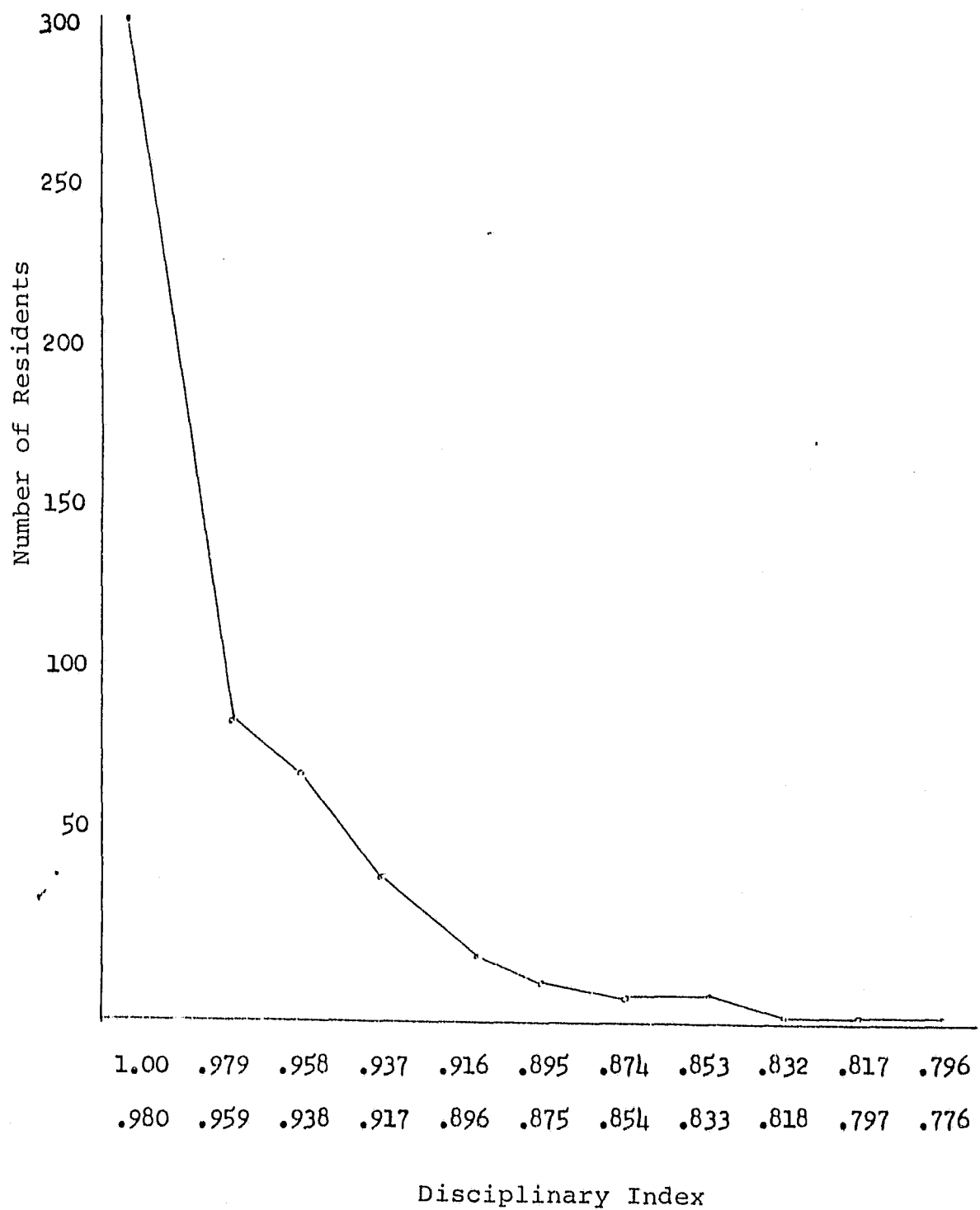
* $p < .05$

Figure Captions

Figure 1. Raw scores on Cornell Index.

Figure 2. Frequency distribution of disciplinary index.





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END