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College Students as Volunteer Subjects

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COLLEGE STUDENTS AS VOLUNTEER SUBJECTS

by

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CHAPTER I

Volunteers are used by investigators for almost all types of psychological experiments in the clinical and counseling areas. However, very little has been said of the Volunteer himself. Is the Volunteer really representative of the particular population to which he belongs? Do personality factors induce a person to volunteer, thus making him non-representative of the general population? Only in recent years has any attempt been made to study this question scientifically. There is still a dearth of this type of investigation in the current literature.

The major studies to date have used similar subject-types, in that they all matched in like manner a group of persons who volunteered as subjects with a group of persons who failed to volunteer. However, the instruments used to distinguish between these groups have been varied.

The findings of many studies seem to contradict one another. Sometimes supposedly complementary studies are actually unrelated to one another. What appears to be needed in helping to determine the representativeness of volunteer subjects is a large body of information on Volunteer and Non-volunteer groups.

It is with this in mind that the present study has been developed. The purpose of the study has been to attempt to find any personality variables which distinguish the Volunteer from the Non-volunteer group.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

Previous Studies

The overall problem with regard to studying volunteers for experimental tests seems to be the determination of factors which influence a person to volunteer or not to volunteer for a test. There have been two methods of approach to this problem. On the one hand attempts have been made to find personality factors that might influence this behavior, and on the other hand studies of factors of environment which might be an influence have been made.

It is with the first approach that the present study is involved, and thus several related studies will be discussed. However, a few words concerning the "environmental approach" should be said, since it is within this area that a possibly important variable lies - that of the circumstances surrounding the requests to volunteer. It has been shown in a comprehensive study by Rosenbaum (15) that the situation and/or approach used definitely seems to affect the volunteering response. By varying the stimulus by which he means the type of approach to the subject, or the background which refers to the reactions of one's fellow group members to a request to volunteer, Rosebaum found that he could influence the response of subjects. For example, he discovered that a person is strongly influenced to volunteer if a shill is placed next to him. This constituted a positive change in the background. Rosenbaum claims that regardless of the "residual" (internal or personality)

factors, the "response" can be predicted fairly well if the stimulus and background are known. Bearing this in mind the present study approaches the investigation of personality influences on volunteering by using a null hypothesis to eliminate any bias toward personality as being a definite influence.

Another study of external stimuli is that of Blake, et al. (2), which found in an investigation at the University of Texas that volunteering may be a function of the relation between the attractiveness of the requested action and that of an alternative to volunteering. In this case classroom students were given the alternative of staying for a quiz or leaving to volunteer for an experiment.

It appears then that in the present experiment any situation offering an alternative to volunteering would add a variable. This would have to be controlled as much as is practical, along with other aforementioned external stimuli.

Most recent study of personality factors influencing Volunteers was an extensive work done by Riggs and Kaess (13) using four different instruments to try to distinguish Volunteers from Non-volunteers, namely the Thematic Apperception Test, College Situational Test (a picture frustration test), the STDCR (a factorially derived inventory), and the Allport Values scales. They found that the combined raw T and C scores on the STDCR showed the high scores from the Volunteers and low from Non-volunteers, indicating the former to be introversive and moody. On the CST the volunteers were characterized by high intrapunitive indicators.

On another study, using the Rorschach (11), it was claimed that signs of maladjustment occurred twice as often among Volunteers as among the members of other groups.

The study most similar to the present one was done by Rosen (14) using the MMPI, Berkeley Public Opinion scale F (fascism), and the Strong Vocational Blank. From the results Rosen seems to conclude that Volunteers are more liberal and well adjusted than Non-volunteers. He found that the F scale showed less facist-mindedness in Volunteers; and on the MMPI that Volunteers show some tendencies toward higher scores on the D, Pt and K scales, higher Pd and Mf among males only, higher Pa and lower Ma among females only. This indicates, he states, that Volunteers admit to discouragement, anxiety and inadequacy more readily than do Non-volunteers.

It would appear that the studies cited all claim to find that a difference exists between Volunteers and Non-volunteers. While some of the investigators tend to interpret results as indicating more maladjustment in Volunteers, it seems reasonable to agree with Rosen's (14) interpretation that Volunteers admit to more inadequacies than Non-volunteers. His interpretation is more plausible when we realize that a large sample of the population, such as Rosen used, would approach normalcy, whereas many contradictory studies used small samples. Nevertheless, this remains an open question which the present study will help answer.

It should be noted that there are some important differences in design between Rosen's study and the present one. Rosen's groups were all taken from college entrants of the same year, whereas the present study involves a sample of three different entering classes. While Rosen employed three instruments,

the present study utilizes only the MMPI.

The statistical handling of data on these studies varies considerably. It appears that t tests such as Rosen used and profile studies such as those done by Welsh (17) and Guthrie (7) are best suited to the present investigation, since the MMPI lends itself readily to this type of analysis.

CHAPTER III

METHOD

A comparison of certain personality aspects was made between those students who responded positively and those who responded negatively to a request for volunteers to serve as subjects for psychological tests administered by graduate students in psychology. In order to try to discriminate between these groups, the MMPI was used as a criterion. For further discussion purposes the persons responding positively will be referred to as the Volunteer group and the persons responding negatively will be referred to as the Non-volunteer group.

The actual groups finally used in this study consisted of a Volunteer group, numbering 18 subjects, male and female, and Non-volunteer group, numbering 20 subjects, male and female. All subjects were students at Loyola University enrolled in a psychology course. In addition to these groups, it was decided later to include a third group, consisting of a random sample of students in general, 20 in number, to check the possibility that the test groups might differ from the student population at large.

Selecting the Groups

The specific variables to be tested were the acts of volunteering or not volunteering. To eliminate as many mixed factors and motives as possible, the investigator sought maximum homogeniety in the groups which were asked to

volunteer. Accordingly, it was decided to limit this composition so as to include only those persons who were asked to volunteer by an instructor during a regularly scheduled psychology class. This automatically brought an additional limitation into play; namely, that all subjects were students in psychology. Any bias this further limiting of the sample might cause was offset by the tightly controlled circumstances of the request to volunteer. Since only a small number of psychology instructors were asked to call for volunteers, the "request situations" were assured of greater uniformity than could be obtained by random requests made by graduate students.

The development of the groups by this method resulted in a homogeneous group of Volunteers numbering 33 males and females, and a homogeneous group of Non-volunteers numbering 52, also male and female. The Non-volunteer group was obtained in numbers proportional to that of the Volunteers in each class from which the latter were picked. All were chosen from official class lists.

Final Selection

After collecting these names, the MMPI profiles were sought from the records of tests taken by entering freshmen, administered by the student personnel department in the fall of the years 1952, 1955, and 1956. This method of obtaining MMPI profiles on the subjects served a dual purpose. First it gave the experimenter a previously completed and readily available personality inventory of each subject thus eliminating the necessity of locating and testing subjects personally. Second it provided a method of obtaining a personality inventory on the Non-volunteers, which would not reveal to them the fact that they were being studied.

Subsequently, a thorough search of the student personnel files disclosed that MMPI scores were not available on all in the above mentioned homogeneous Volunteer and Non-volunteer groups, since some were transfer students, who are not tested, and others were persons who had somehow escaped the test session. Thus, the final number in each group was cut considerably, resulting in only 18 records on Volunteers, and 20 records on Non-volunteers. The Random Cross-sectional group was then set at 20 also.

In analyzing the MMPI data, Rosen subjected the individual scales to t tests. In addition to this method, the present study will utilize a coding system form of profile analysis in order to try to pick up any differences which might exist in profile that would not show up by statistical treatment of individual scales. The expediency of this method has been pointed out by Welsh (18), Guthrie (7) and others.

Although certain statistical handling of these codes and profiles is deemed inadequate by some (e.g. Cronbach 3), on the grounds that if a single scale is partly invalid, then the profile is likewise misleading, it has been shown that the pattern is more important for differential diagnosis than is intrascale quantification (4, 12, 16). This is indeed indicated by Hathaway, himself, who states that the total test pattern must be considered (9).

CHAPTER IV

RESULTS

The means and standard deviations for each scale of MMPI for all three groups are listed in Table 1.

TABLE 1

MEANS AND STANDARD DEVIATIONS OF THE THREE GROUPS

	Volunteer N=18		Non-volunteer N=20		Random group N=20	
	M	S.D.	M	S.D.	M	S.D.
F	52.0	7.8	54.9	9.9	55.8	7.1
K	54.0	8.8	50.0	9.4	52.5	8.1
Hs	50.9	10.2	47.7	4.9	48.8	6.1
D	54.2	8.8	50.9	11.8	53.8	13.1
Hy	56.4	10.5	51.5	6.2	56.6	8.0
Pd	58.9	8.8	57.6	8.0	60.2	10.0
Mf	59.4	12.2	58.1	10.3	58.8	8.3
Pa	56.1	8.4	56.9	10.5	54.0	10.6
Pt	57.2	9.3	58.8	14.2	57.4	9.6
Sc	61.3	10.6	60.8	21.0	59.2	11.5
Ma	57.0	12.8	53.9	16.7	54.5	10.9
Si	54.4	13.2	51.2	10.1	50.8	9.4

It can be seen that the S.D. around most means was rather large, and that the differences in mean T scores between groups on the various scales were not

so. These results would suggest that the t test would be non-significant on most of the scales; and such was the case between Volunteers and Non-volunteers, and Volunteers and Random Sample on the 10 clinical and F and K scales. See Table 2. The same can be said for the differences in means between Non-volunteers and Random Sample. The only difference approaching significance was on the Hy scale where the mean of the former was 5.1 points lower than that of the latter with a t=2.19. Probability approaching the 1% level should be considered significant on the small sample. Thus the null hypothesis may be retained with reasonable confidence, and the groups are shown by this statistical procedure to be similar on the MMPI.

However, the fact must not be overlooked that some of the means do differ to a degree possibly indicating a trend. In addition to the above mentioned difference on the Hy between Non-volunteers and the Random Group, there was also a notable difference on this scale between the Volunteers and the Non-volunteers, namely a 't' equalling 1.64, which approaches a 10% level of confidence. There was another difference which was also better than the 20% level. This was between the Volunteer and Random groups on the F scale with a t = 1.54, with the Volunteer group being the lower.

It might be pointed out here that the means of the cross sectional Random Group seem to be a combination of the other two groups; that is, the means lie for the most part in between the mean scores of the other two. This is what one would expect if it is realized that the Random Group would probably be composed of possible Volunteers and Non-volunteers, and thus show a profile related to both, e.g., the above mentioned Hy and F scales.

TABLE 2

CRITICAL RATIOS OF DIFFERENCES IN MEANS#

	Volunteer & Non-volunteer	Volunteer & Random	Non-volunteer & Random
F	.98	1.54**	.32
K	1.29*	.63	.71
Hs	1.17*	.73	.65
D	.97	.11	.57
Hy	1.64**	.22	2.19***
Pd	.46	.73	.75
Mf	.39	.14	.23
Pa	.25	.66	.79
Pt	.41	.34	.13
Sc	.09	.57	.31
Ma	.62	.59	.54
Si	.87	.94	.09

C.R.'s at or better than 5% probability are indicated by ***; better than 10% probability, **; better than 20% probability, *.

Though the groups did not seem to differ significantly in mean score on any one scale, there were a few differences in the variation of these means between groups. The most significant difference in standard deviations was found between the Volunteer and Non-volunteer groups on the Hs scale. The former varied more widely at a significant level from their mean than did the latter (t = 2.8, P = 1%).

This variability was exactly reversed on the Sc scale with the Non-volunteers being much more variable than Volunteers (t = 2.70 P = 2%). Furthermore, the Non-volunteers also varied more than the Random Groups on this scale with a T = 2.46 or P = 2% (see Table 1).

In order to try to gather as much meaning as possible from the MMPI's, it was decided also to apply various types of profile coding. The expediency of coding has been pointed out by Hathaway (8), Welsh (17,18) and others.

Converting the means of each scale to code numbers after the manner described by Welsh (17) resulted in the MMPI profiles for each group, indicated in the body of Table 3.

TABLE 3

CODED MEAN PROFILES

Volunteer	8-5|1793602/1
Non-volunteer	8-7|5|69302/1
Random	4-85739620/1

Several points should be noted concerning the coded means in Table 3. First, in each group only 1 scale lies above 1 S.D. above the mean. Second, in terms of peak areas and lowest scale score, all groups are similar, especially the Volunteer and Non-volunteer, which have the same peak on Scale 8 and low on Scale 1. It should be remembered, however, that these are based on the mean T scores of each scale, and are therefore subject to influence by extreme scores. This is especially true of Scales 8 and 9 of the Non-volunteer group. Therefore it was decided to code each individual profile of all three groups and from

these profiles to obtain the average rank of each scale code. The resulting ranks are shown in Table 4.

TABLE 4

	1 (Hs)	2 (D)	3 (Hy)	4 (Pd)	5 (Mf)	6 (Pa)	7 (Pt)	8 (Sc)	9 (Ma)	0 (Si)
Volunteer	7.1	5.7	5.3	4.7	4.6	5.8	5.0	3.8	5.0	6.4
Non-Volunteer	7.8	6.2	5.4	3.6	4.2	4.8	4.4	3.9	6.1	6.9
Random	7.6	5.7	4.6	3.8	4.2	6.4	4.7	3.9	6.0	6.6

The resulting codes are: Volunteers, 8457936012; Non-volunteers, 4857639201; Random, 4853729601. From this it can be seen that the Non-volunteers and the Random Groups are quite similar to each other, but the Volunteer group loses this similarity at the peak score by merely having the 8 scale and the 4 scale in opposite order to that of these other two groups.

Comparing these refined profile codes to the coded scale means, one can see that the lower end of the profiles have remained relatively unchanged.

In view of the fact that there was skewness in the groups' mean scores, especially among the Non-volunteers, it was decided to apply a six fold Chi-square test on the group profiles to determine whether there is a significant difference between groups on the various scales. A cutting point at T-score 50 was selected in order to follow Hathaway's norms.

The results of the Chi-square distributions agree well with the t-tests, none being at a probability of such significance (1% level here) that the null hypothesis of "no difference" could be rejected. Only one scale, the Hs with $X^2=4.86$, showed a Chi-square exceeding the 10% level of confidence. The Hy scale gave a X^2 of 3.91, or between 10% and 20% probabilities.

CHAPTER V

DISCUSSION

From the results it appears that one cannot readily discriminate between the 3 groups to any extent by use of mean scores, since there was no significant difference between any of the 3 groups except on the Hy scale. Here the Non-volunteers scored lower than the Random group at the 5% level of confidence; they also seemed to be lower than the Volunteer group, but not at significant level of confidence (approximately 20%). If this is not chance difference, it is not clear what this single low score would indicate in a group of normals, except possibly less of a tendency on the part of Volunteers to exhibit hysterical signs as described by Hathaway. Probably this score would be more meaningful if considered in pattern. Thus it will be discussed below with code patterns.

Another difference in means indicating merely a trend was on the F scale where Volunteers were lower than both other groups. Considering the purported meaning of the F scale this may indicate that Volunteers are possibly more self accepting. This is partially borne out by the fact that a tendency for Volunteers to have higher K also existed (P=25%). This, as Rosen (14) has pointed out, indicates more awareness of conflict and defensiveness. Nevertheless, the results of the comparison of these particular groups do not seem to fully support those of Rosen (14,p.191). However, the direction of difference on the D and K scales in the present study did agree with Rosen in that

Volunteers appeared to be higher on these scales. This difference was not large enough to rule out completely the factor of chance, but indicates that a larger sample may have agreed more fully with Rosen's results.

At the same time it must be realized that a single difference such as this should be considered doubtful merely on the basis of its singularity, since with the number of combinations possible among the scales, one might occur due to chance alone.

From these results it does not seem that difference in scale mean score is a valid indicator of any distinction between experimental groups on this population.

The Chi-square tests applied to the three groups on each scale seem to bear out the t-test as indicating no significant difference. On the Hs and Hy scales there may be a trend indicated since both statistics indicated this direction. Possibly larger groups would have agreed more fully with Rosen's results.

Another statistic which showed a significant difference, if only on two scales, was the difference in variability around the mean. On the Hs scale the Non-volunteers were decidedly less variable than the Volunteers (1% level of confidence). It is possible that this consistency among the former group is related to the above mentioned tendency to be less aware or less prone to admit to so-called psychological weaknesses, such as are implied in the Hs scale questions.

The second scale showing difference in variability was the Sc scale. On this scale the Non-volunteers were decidedly more variable than the other two groups (at a 2% level of confidence). Although not quite significant

statistically, this would seem to suggest that the Non-volunteers are of a more heterogeneous nature than the Volunteers or Random Group in traits which are measured by the Sc scale. Whether this would indicate a recognizable difference between these groups in these traits could not be said solely on the basis of the present interpretation of the Sc scale.

Another method of comparing the groups, the coded profiles, will not be discussed. As can be seen from Table 2, Column 1, there is not a great deal of difference between groups.

When Rosen's scale mean scores were coded and compared with the present study, his study again showed more difference between groups. It can be noted from Table 3 that not only the Volunteer and Non-volunteer groups were similar to each other but that all three groups are similar in profile to each other, although not precisely alike. Possibly, this similarity is exaggerated, since there is a weakness in using the coded profiles of the means, because on several scales in each group there were a few very extreme scores, which tend to influence means of scale codes unequally. Thus, it was decided to determine the average rank of each scale coded individually and use this as a more representative profile of each group.

The coding resulted in the ranks in Table 4. From this it can be seen that Volunteers and Random Cross Section groups are relatively unchanged, especially on the highest and lowest scales. However, the Non-volunteer group has shifted from a high on 8 to a high on 4, with 8 taking second highest position. This is understandable, when we know that scale 8 in this group had two extreme scores unduly affecting the T score mean upward. Using these profiles, then, it can be seen that the Volunteer group differs in having scale

8 highest, instead of scale 4, as the others do.

One additional point concerning these profiles should be pointed out before attempting any statements relating the high codes to personality. That is that the top scale in each group is the only one over 1 S.D. above the mean, which indicates that these groups do not fit very well the descriptive statements concerning abnormals. With this in mind, it then seems appropriate to locate in the literature some form of description referring to normals. The list of associated adjectives related to various codes as verified by Black (1) will accordingly be used.

Using only adjectives which Black found to be related significantly high to the peak code, one can say that the Volunteer group with a high 8 code are seen by others as being apathetic, worldly, undependable, orderly, seclusive, asthetic and wise (and possibly mature) and seen by themselves as being pugnacious, eccentric, conceited, rebellious and loyal.

The Non-volunteer and Random groups, with a high 4 code are seen by others as incoherent, moody, partial, sociable, frivolous and conventional; and seen by themselves as dishonest, lively, clever, cynical, worldly and occasionally adaptable, friendly, and peaceable.

If it be remembered that these are the profiles of incoming college freshmen, then these adjectives associated with the latter groups seem very apt. The freshman student is not only diverse, but usually immature and uncertain of his actions.

The Volunteer group seem to show a tendency to differ somewhat in the type of adjectives associated with them. Possibly they might be summed up as being

of the introverted or schizoid* type person, which would possibly show a slight difference from the average type freshman in that they are more "serious minded."

That this distinction is at present rather vague and tentative goes without saying. This does, however, give a possible hypothesis for future study, perhaps under a more rigorous design. The groups are most certainly similar in that the lower end of the profiles are similar, and indeed the lowest two codes are exactly the same. It would be expected that some sort of similarity should exist, mainly on the basis that any college group is a rather select group as has been shown on many studies, both in personality and in social and intellectual acumen.

It appears then that in the present study there is most certainly, no statistically significant difference between Volunteers and Non-volunteers; but, on the other hand, there is a tendency for the groups to show certain general qualities of inter-personal behavior which may distinguish between them. It would seem that further investigation is warranted, using either the same population and applying new MMPI scales (19), or using another population and restructuring the setting and approach of the volunteering situation.

It must also be noted that in reference to the present population the fact exists that several of the students took the particular MMPI as long as four years previous to the situation in which they were asked to volunteer, and at least half took it a period of three months to six months before this time. Some question is raised as to whether the MMPI is a valid indicator in this case, since its reliability is still a moot question.

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*The schizoid personality as distinguished from any type of pre-psychotic person.

The time factor should be kept in mind for a future design, as it would seem most logical to make requests all within a certain determined time space after the MMPI is administered.

CHAPTER VI

SUMMARY

An attempt was made to find whether any differences existed between students who responded positively and students who responded negatively to a request to volunteer for testing by a graduate student when asked to do so by an instructor in a classroom situation.

The criterion of discrimination was the MMPI, and the samples were all students at Loyola University in various psychology courses.

The results indicated that there was no statistically significant differences on the mean scale scores between Volunteer and Non-volunteer groups, but there was a significant difference between means on the Hy scale, between the Non-volunteer group and a random sample of college students. No conclusion was drawn from this. The results further indicated, however, that by coding the individual profiles and obtaining the average rank of each code, a difference in high code existed, which distinguished the Volunteer group from the Non-volunteer and Random groups. Specifically, the former group was 8 high, as against 4 high for the latter 2 groups.

This was interpreted as possibly indicating that while the groups were all similar, the Volunteers tended to be more introverted or schizoid, and probably "serious-minded."

A discussion of design weakness and suggested improvements was included.

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APPROVAL SHEET

The thesis submitted by Robert W. F. Kelly has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

1959
Date

Vincent O'Hara S.J.
Signature of Adviser