ED 053 222   24   TM 000 824

AUTHOR   De Charms, Richard
TITLE   Motivation Measure for Elementary School
              (Origin-Pawn Measure). Final Report.
INSTITUTION   Washington Univ., St. Louis, Mo.
SPONS AGENCY Office of Education (DHEW), Washington, D.C.
BUREAU NO   BR-9-F-074
PUB DATE   1 Jan 71
GRANT   OEG-6-9-009074-0078(010)
NOTE   31p.

EDRS PRICE   EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS   *Academic Achievement, Data Analysis, *Elementary
              School Students, Goal Orientation, Grade 6,
              Intelligence, Measurement Techniques, *Motivation,
              *Negro Youth, Predictive Ability (Testing), Response
              Style (Tests), Role Playing, *Student Behavior,
              Student Motivation, Testing, Test Reliability,
              Tests, Test Validity
IDENTIFIERS   *Origin Pawn Measure

ABSTRACT
        The object of this research was to develop a measure
of motivation of elementary school children to predict academic
achievement independent of intelligence. Three basic steps were
proposed to analyze data from approximately200 Black children. These
steps were: 1) operational (content) analysis of two free response
measures, resulting in a coder's manual, 2) tests of reliability of
the measure, 3) tests of the validity of the measure. Procedures
included establishment of coder reliability, test homogeneity and
stability; determination of discriminant validity, predictive
validity, and experimental validity of the new test. Results indicate
that the measure meets criteria which make it useful for experimental
purposes and has comparable reliability and validity to other free
response measures of motivation. It is significantly related to
verbal measures of academic achievement independent of intelligence.
The amount of significant variance accounted for is small. Classroom
motivation training units were strikingly reflected in the measure
demonstrating its validity experimentally. (Author/CK)

9-F-/'/4
PA 24

Final Report
Project No. 59176
Grant No. OEG-6-9-009074-0078(010)

MOTIVATION MEASURE FOR ELEMENTARY SCHOOL CHILDREN
(Origin-Pawn Measure)

Richard de Charms
Washington University
St. Louis, Missouri 63130

January 1, 1971

U.S. DEPARTMENT OF
HEALTH, EDUCATION AND WELFARE

Office of Education
Bureau of Research

1

Final Report
Project No. 59176
Grant No. OEG-6-9-009074-0078(010)

Motivation Measure for Elementary School Children
(Origin-Pawn Measure)

Richard de Charms
Washington University
St. Louis, Missouri 63130

January 1, 1971

U.S. DEPARTMENT OF
HEALTH, EDUCATION AND WELFARE

Office of Education
Bureau of Research

CONTENTS

ABSTRACT

Motivation Measure for Elementary School Children
Richard de Charms, Principal Investigator
Washington University, St. Louis, Missouri
$10,000.
September 1, 1960 - August 31, 1970

Objectives. To develop a measure of motivation of
elementary school children to predict academic
achievement independent of intelligence.

Procedures. Three basic steps were proposed to analyze
data from approximately 200 Black children. These
steps were operational (content) analysis of two
free response measures, resulting in a coder's
manual. 2) tests of reliability of the measure,
3) tests of the validity of the measure. Procedures
included establishment of coder reliability, test
homogeneity and stability; determination of discri-
minant validity, predictive validity, and experi-
mental validity of the new test.

        Results indicate that the measure meets criteria
which make it useful for experimental purposes and
has comparable reliability and validity to other
free response measures of motivation (e.g. $\underline{n}$ Achieve-
ment). It is significantly related to verbal measures
of academic achievement independent of intelligence.
The amount of significant variance accounted for is
small. Classroom motivation training units were
strikingly reflected in the measure demonstrating
its validity experimentally.

1

II. PROBLEM

To develop for research purposes a measure of motivation of elementary school children that pre-dicts (independent of intelligence) school behavior and standardized academic achievement scores. The measure is to be called the Origin Pawn (OP) measure.

It is commonly believed in educational circles and in psychology that human potential is primarily a function of intellectual capacity. However, a measure of intelligence typically accounts for only about one-third of the variance of academic achieve-ment measures (data available indicate correlations between I.Q. and eight academic measures that range from +.50 to +.72 for 77 Black sixth grade children). Most educators and psychologists would agree that another prominent determinant of school behavior is pupil motivation. Attempts to measure this deter-minant, however, have been disappointing (de Charms, 1968; Crandall, et.al, 1962).

This project attempted the development of a measure of motivation based on a new theoretical orientation and spurred by some preliminary empirical evidence.

III. THEORETICAL RATIONALE AND RELATED RESEARCH

de Charms (1968) has developed the concept of personal causation and the related shorthand termin-ology of the Origin-Pawn variable. The phrase "personal causation" is used to emphasize the per-sonal element of motivation and to stress that a motive is an internal thing -- "that within the individual, rather than without, which incites him to action" (Webster's definition). The basic premise

2

of the theory is that man's primary motivation is to
be effective in causing changes in his environment.
Man strives to be a causal agent, to be the origin
of his own behavior; he strives for personal causation.

This conception of motivation has its roots in
Heider's (1944, 1958) theory of the locus of causality
for behavior, and is closely allied to Rotter's (1954,
1966) conception of the locus of control of reinforce-
ments and White's (1959) notion of effectance. Per-
sonal causation is seen as a broader concept than,
but not unrelated to, McClelland's (1953) notion of
achievement motivation (n Achievement).

The terms Origin and Pawn are conceived as
follows. An Origin is a person who feels that he is
in control of his fate; he perceives the locus of
causality for his behavior to be internal to himself;
in Rotter's (1966) terms he feels internal control
over his reinforcements. A Pawn feels that he is
pushed around, that someone else pulls the strings
and he is the puppet. He perceives the locus of
causality for his behavior as external to himself,
he lacks control over his reinforcements. The Origin
feels potent, the Pawn feels powerless.

More careful definition and specification of
what is contained in the two concepts is presented
in de Charms (1968 & 1969), Kupermen (1967), de
Charms and Carpenter (1969), de Charms, Collins,
Jackson & Shea (1969). More precise definition of
the concepts at the empirical level is the aim of
the development of an empirical measure.

Explicity stated in the theory of personal
causation (de Charms, 1968) are guidelines for the
development of measures of concepts such as the Origin-
Pawn concept. Two points are most important. First,
the motive concept can never be completely objectified
through operational definitions as they are commonly

3

conceived. Second, the most important and neglected
area of human motivation is the determination of what
a person will do under conditions of relative freedom,
i.e., where he decides what he will do, rather than
where what he will do is strongly influenced by forces
external to him.

Both of these statements have implications for
the measurement of motives. To assume that a concept
can never be completely objectified is not to assume
that the same concept cannot be useful scientifically.
Here, drawing heavily on Polanyi's (1958) concept
of personal knowledge and Bridgman's (1959) concept
of the operational analysis of "introspective words
in the subjective mode," de Charms contends that the
human being becomes the only instrument that can
validly define subtle human motivational concepts.
The operational analysis suggested and tried by
Bridgman in a seminar is, according to de Charms
(1968), what is occurring when a group (such as the
McClelland group) spend endless hours clarifying
concepts such as achievement motivation in order to
derive a manual for content analysis. Analysis of
specific documents forces rigor into the definition
and forges the theoretical concept in the fires of
empirical data.

It is this theory that underlies the development
of the Origin-Pawn measure out of operational analysis
of relatively free responses produced in imaginative
productions. To measure motivation with anything
approaching a forced choice situation, such as a
questionnaire, would not tap the very essence of the
Origin concept. The challenge is to find some way
to put more rigor into the analysis of responses
emmitted by subjects rather than to rigorously
control the responses so that they can be easily
analysed.

Relevant related research, therefore, involves
studies of content analysis as reviewed by Holsti

4

(1969) and especially the research by the McClelland
and Atkinson group (McClelland, et al, 1953, McCelland,
1961, Atkinson, 1958).

Although the Origin-Pawn measure is conceived
to be a general measure of motivation, it is parti-
cularly appropriate in dealing with Black children
if recent evidence such as the Moynihan and the
Coleman Reports (Moynihan, 1967, Coleman, 1966) are
correct. For instance, the Coleman report indicated
that black and white highschool students aspire to
go to college in about the same percentages, but the
percentage of the Blacks who have taken concrete
action toward that goal is far lower than of the
Whites. This indicates a discrepancy in the real-
istic goal setting and planning of the two groups.
It is exactly this type of realistic goal setting
that is a central element in the concept of the
Origin-Pawn variable.

IV. OBJECTIVES

To develop and validate a measure of the Origin-
Pawn variable for Black elementary school children
by the following steps:

  (a) Opertional analysis of creative productions
       resulting in a Coder's Manual;
  (b) Establishment of coder reliability;
  (c) Assessment of test homogeneity;
  (d) Assessment of test stability;
  (e) Determination of the discriminant validity
       of the test;
  (f) Determination of the predictive validity
       of the test;
  (g) Establishment of the experimental validity
       of the test by direct experimental manipul-
       ation of an Origin-trained group to be
       compared with a non-trained group.

5

V. PROCEDURES

General Design. Step 1 (operational analysis) derives
from Bridgman's (1959) recommendations. In a seminar
setting the theory of personal causation and the
Origin-Pawn variable was thoroughly discussed and
dissected with a view to attaining as clear a view
of the concpet as possible and developing clear communi-
cation between members of the group. Once the concept
was as clear and precise as possible from the a priori
theoretical analysis, two members of the staff individ-
ually turned to the empirical data and looked for
embodiments of the concept in the creative stories
of children. Extensive consideration of instances
in the stories and returning for group discussion
eventually resulted, through the logical-empirical
method (Margenau, 1950, Feigl & Scriven, 1956-1958),
in a coder's manual that is the concrete result of
the operational analysis. Two sets of forty protocols
were used to refine the manual, test relibilities
and train two coders.

Steps 2 and 3 were designed to establish re-
liability and validity of the measure. Reliability
was assessed by computing (1) spilt-half reliabilities
of four samples of data, (2) intercorrelations between
scores on each individual story and all other stories,
(3) intercorrelations between each category score
for each protocol and all other category scores,
(4) a homogeneity ratio, and (5) test-retest relia-
bility coefficients.

Discriminant validity was assessed by comparing
the Origin-Pawn measure for other measures some de-
rived from the same method of content analysis, some
derived from different methods. Predictive validity
was assessed by computing correlations between the
Origin-Pawn measure and nine measures of academic
achievement. Experimental validation was assessed
by comparing mean Origin-Pawn scores for students
given motivation training in the classroom for two

6

years, for one year, or no training at all.

Population of Subjects. The sample was composed of Ss
drawn randomly from those pupils on whom all necessary
data were available and equally representing males
and females and Experimental and Control Ss. The
population comprises all sixth grade pupils (1967-68)
in a large urban school district serving primarily
low-income Black children.

Data and Instrumentation. The data submitted to
operational analysis to derive the Origin-Pawn score
resulted from the Test of Imagination. The Test
of Imagination (sometimes referred to as the TAT)
was administered under conditions described by
McClelland et al, (1953) using verbal cues from
Winterbottom (1958). The children wrote six stories
to the following cues (1) A father and son talking
about something important, (2) Two men working at a
machine, (3) A boy with his head resting on his hands,
(4) A mother and her child look worried, (5) A young
person sitting at a desk, (6) Brothers and sisters
are playing -- one is a little ahead.

In the classroom an experimenter passed out
protocols with one of these cues printed at the top
of each page plus the following four questions equally
spaced down the page: (1) What is happening? (2)
What happened before? (3) What is being thought or
wanted? (4) What will happen? Ss were instructed
to write imaginative stories to each cue and were
allowed four minutes for each story. The Ss in this
study produced a mean of approximately forty words
per story and the protocols had previously resulted
in valid n Achievement scores.

The Children's Picture Test (CPT) was used as
a comparison to assess discriminant validity. It
was administered under similar classroom conditions
but with no time limit. The CPT booklet contained
six pages each showing a cartoon with two figures

7

of children. A balloon above the first child indicated
that he made a statement, the balloon above the second
child was blank and the subject was instructed to
write his response in the balloon. The statements
of the first figure were: (1) How come you didn't
get what you wanted for Christmas? (2) Why is she
always hurting herself? (3) When you grow up do
you think you could be anything you wanted? (4)
Whenever you're involved something goes wrong. (5)
That's the third game we've lost this year! (6)
Why does her mother always holler at her? Data from
these protocols were scored using Battle's (1963)
manual for internal and external control of reinforce-
ments.

No description of the n Achievement scores,
standard academic achievement test scores (Iowa Test
of Basic Skills, Stanford Achievement Test, Lorge-
Thorndike Intelligence Test) will be included here.

Past Research (Carpenter, 1967, de Charms, et
al. 1969) resulted in a measure referred to as the
Goal Realism Measure. As an outgrowth of Atkinson's
(1958) theory of motivation and risk-taking a measure
was developed to assess risk-taking in an academic
subject (arithmetic). Sixty arithmetic problems
were gleaned from elementary school text-books, com-
prising ten problems each at six levels of difficulty
from very easy (e.g., $1 + 2 =$ ___) to very hard
(e.g., 12 lbs. = ___kilograms). This test was ad-
ministered in the classroom, each child's test scored
and a form filled out to inform the child at a glance
of his success at each level in terms of probabilities
(e.g., 2 out of 10, etc.). In an individual session
with an experimenter these probabilities were carefully
explained to the child and he then took a test where
he could choose for each of ten trials the level of
problem difficulty that he preferred. Points were
awarded for correct answers scaled to the individual's
own level of probability, thus controlling for ability.

8

The Goal Realism score was the mean of the ten pro-
babilities chosen by the child. Data on a large sample
indicate that the Goal Realism Score (mean probability)
is significantly correlated with academic achievement
scores. Pupils who choose easier items (higher mean
probability of success) score higher on standardized
achievement tests. This is especially true for boys
with arithmetic achievement tests where Goal Realism
correlates +.51, and the partial r with I.Q. controlled
is +.44. Since this measure is specific to arithmetic
and most useful with boys (who are better on arithmetic
than the girls in this sample) the need for a more
general measure derived from the stories is posited.
Nevertheless, this measure can be used to help validate
the more general Origin-Pawn measure.

Experimental Manipulations. In the prior research
project (de Charms, 1965) that produced the data to be
used here a major effort was made to develop class-
room training techniques designed to increase moti-
vation in the trained children. As a part of that
project a classroom unit called the Origin Manual
was developed in collaboration with the classroom
teachers.

    The manual was about fifty pages long, arranged
in twenty five daily exercises, with about twenty
minutes required to complete each one. The major
stress throughout the manual was on personal res-
ponsibility. The children were taught that if they
acted like Origins, if they took responsibility for
their behavior rather than waiting for the environ-
ment to act upon them, that they could become more
successful and enjoy themselves more. Another related
emphasis was on realistic goal setting strategies.
The children learned (a) the concept of goal setting;
(b) the importance of self evaluation in making their
goals realistic; (c) the blocks or hinderances that
impede individuals from reaching goals; (d) the instru-
mental activity that they could use (e.g., planning
carefully, practicing their skills, using feedback

9

and help from others) in attempting to reach their
goals. Most important, they learned that goal setting
must be a personal thing, that they themselves must
set goals acting like Origins.

Two role-playing exercises in the manual, derived
from a study by Kuperman (see de Charms, 1968), showed
the children how it feels to be treated like Origins
and Pawns. In the Pawn exercise, the teacher strictly
controlled the children, acting very authoritatively in
directing them in an art activity. Following the
exercise the teacher explained what she had done
and discussed the powerlessness that one feels when
he is treated like a Pawn. On the following day,
the teacher had the students perform a similar activity,
but this time she allowed them freedom to be creative
and to assume responsibiltiy for their project.
Again she descirbed what she had done, told them that
they had been treated like Origins, and discussed
the benefits and responsibilities of acting like
Origins.

VI.   RESULTS

Coder's Manual. The coder's manual for the Origin
measure (Plimpton, 1970) is available from the
Author (1). It is complete with practice stories
and expert scoring so that it may be used by other
researchers. Learning to score reliably demands
practice and cannot be accomplished overnight.

After the preliminary manual was developed, a
second scorer learned the scoring system to a criterion
of 90% agreement with the expert scorer. Training
for approximately two hours daily, the new scorer
reached the reliability criterion after about one
and one-half weeks and about 250 practice stories.
The two scorers worked independently while scoring

---

1. Address: Richard de Charms, #1183, Washington
University, St. Louis, Missouri, 63130.

10

and then discussed intensively their discrepancies.
These discussions are crucial and should result in
written agreements between scorers complete with
examples from stories for the scorers to consult
in future scoring. Thus, while learning to score,
the scorer develops a supplementary manual for himself.
This is in the spirit of the concept of operational
analysis of introspective material in the subjective
mode (Bridgman, 1959). Our impression is that, in
general, learning to score may take longer than the
example given above, since the novice discussed above
had the advantage of lengthy discussions with the
person who developed the manual.

After reaching 90% agreement, the second scorer
coded a one-third random sample of 525 protocols
(N = 175 X 3 protocols for each subject). The per-
centage of agreement on all categories for these
(the actual data) was 90.2%. In scoring each pro-
tocol of six stories the scorer made a binary deci-
sion for each of the six categories for each story.
That is, for each story the scorer decided whether
it contained evidence (as specificed in the manual)
for each of the following categories: (1) internal
control, (2) internal goal setting, (3) internal
determination of instrumental activity, (4) personal
responsibility, (5) reality perception, (6) self-
confidence. Thus for each protocol the scorer made
thirty-six such binary decisions. Chance agreement
between two scorers working independently would be
50%.

Each category is scored only once per story so
that the maximum score that one story can receive is
six, the minimum is 0. Since the protocols contained
six stories the possible range of scores per subject
is from zero to thirty-six (actual range = 0 - 31).

Test Homogeneity. The homogeneity of the test was
assessed in four ways: (1) spilt-half correlations
were computed on the scores of the odd vs. the even

11

numbered stories written by each subject; (2) inter-correlations were computed between each story score and all other story scores; (3) intercorrelations were computed between each category score for each protocol and all other category scores; (4) Scott's (1960) homogeneity ratio was computed.

Table 1 presents the spilt-half reliabilities for the four samples used. Sample 3 (N = 175) is here divided into various cells of the experimental design used for experimental validation. Reliabilities range from .35 to .91. The Spearman-Brown (Brown, 1910, Spearman, 1910) prophecy formula was computed for a test twice as long as either half, i.e. the actual length of the test.

Table 2 presents the intercorrelations between each story cue (Items 1 through 6) and each other story cue for each cell of the experimental design.

Table 3 presents intercorrelations between the scoring categories for control subjects only (Cell 4) for both 1968 (6th grade N = 53) and 1969 (7th grade N = 108). Presented here also are the homogeneity ratios for the two samples.

Insert Tables 1, 2, 3 about here

Test-Stability. The stability of the test was assessed by computing test-retest correlations. Table 4 presents test-retest data for tests administered a year apart either at the end of the fifth grade and again at the end of the sixth, or at the end of the sixth and again at the end of the seventh grade.

Insert Table 4 about here

12

Table 1

Spilt-half Reliabilities of Six Verbal Cues
of the Origin-Pawn Measure
(Cues 1, 3, 5 vs. 2, 4, 6)

	N	r	Spearman-Brown Prophecy
1st Sample	40	+.43	+.60
2nd Sample	40	+.84	+.91
3rd Sample			
Cell 1	57	+.50	+.67
Cell 2	41	+.55	+.71
Cell 3	27	+.51	+.68
Cell 4 (Controls)	50	+.21	+.35
Combined	175	+.66	+.80
4th Sample (Controls)	58	+.65	+.79

13

Table 2

Intercorrelations of the Six Story Cues
on the Origin-Pawn Measure
(Untreated Control Ss only)

Story Cue Number

	1	2	3	4	5
1					
2	.17				
3	-.08	.04			
4	-.16	.27	.27		
5	.05	.09	.23	.30	
6	-.08	.16	.15	.11	.07

14

Table 3

Intercorrelations of Subcategories
of the Origin-Pawn Measure
(Untreated Control Ss only)

	Internal Control		Goal Setting		Instrumental Activity		Reality Perception		Personal Responsibility		Self Confidence		Total OP	
*	1968	1969	1968	1969	1968	1969	1968	1969	1968	1969	1968	1969	1968	1969
I.C.														
G.S.	.35	.17												
I.A.	.58	.09	.33	.37										
R.P.	.26	.16	.20	.17	.36	.16								
P.R.	.41	.13	-.04	.03	.31	.19	.21	.36						
S.C.	.33	.07	.46	.08	.34	.26	.30	.37	.26	.55				
Total	.72	.27	.67	.53	.75	.56	.59	.68	.46	.67	.71	.69		
Mean Score	0.51	0.07	1.68	1.60	1.00	0.82	0.89	1.36	0.57	1.10	1.01	0.86	5.64	5.77
	0.64	0.06	1.99	1.74	1.15	0.99	1.06	1.95	0.57	1.36	1.10	1.22	15.88	14.18

Homogeneity Ratio (Scott, 1960)
1968 = +.22
1969 = +.31

* 1968 N =53, 1969 N = 108

15

Table 4

Test-Retest Reliability
(1967 - 68 and 1968 - 69)

	N	r
5th (1967) and 6th (1968) Grades	91	+.414
6th (1968) and 7th (1969) Grades	49	+.384

16

Discriminant Validity. As a test of discriminant
validity the Origin-Pawn scores were compared with
(1) n Achievement scores derived from the same story
protocols and the Origin-Pawn scores (same measure,
different trait), (2) an Origin-Pawn score derived
from content analysis of Battle's Children's Picture
Test (different measure, same trait), (3) an Internal-
External Control of reinforcements score derived
from the Children's Picture Test (different measure,
related trait), and (4) a Goal Realism score (Shea,
1969) (different measure, related trait). Table 5
presents the intercorrelations between these variables.

Insert Table 5 about here

Predictive Validity. For two different years (i.e.,
1968 when the children were in the 6th grade and
again in 1969 when the children were in the 7th grade)
the Origin-Pawn scores were correlated with various
measures of academic achievement taken from standard-
ized tests (The Iowa Test of Basic Skills, The Stanford
Achievement Test and two project developed tests of
spelling and arithmetic ability called the Carpenter
(1967) tests.) Table 6 presents correlations between
these nine measures of academic achievement and the
Origin-Pawn variable for both years. In addition,
the correlations are presented between the achieve-
ment measures and results of the Lorge Thorndike
(   ) test of intelligence. Finally, the table
presents the partial correlations between the
Origin-Pawn variable and the academic achievement
measures with I.Q. partialed out for both years.

Insert Table 6 about here

17

Table   5

Intercorrelations between Two Methods
and three Measures

(N = 35)

		Method I (Imaginative Stories)		Method II (Children's Picture Tes	
		Measure A Origin-Pawn	Measure B n Achievement	Measure A OP	Measure C I-E
Method	Measure				
I	A (OP)	(.41)*			
	B (nAch)	.22	(.29)*		
II	A (OP)	-.12	-.02		
	C (I-E)	-.13	-.02	.22	(.53)*
	Goal-Realism	.32	.19	.12	.02

*   One year repeat reliability

Table 6

Correlations of Origin-Pawn Scores
with Academic Achievement Scores

	1968 OP	1966 I.Q.	Part-ial $\underline{r}$ OP_{IQ}	1969 OP	1969 I.Q.	Part-ial $\underline{r}$ OP_{IQ}
Carpenter Arithmetic	.05	.38	-.04	.13	.51	-.01
Stanford Arithmetic	-.03	.38	-.13	.17	.45	.05
Carpenter Spelling	.38	.52	.31*	.24	.45	.13
Stanford Paragraph Meaning	.26	.48	.17	.22	.36	.13
Iowa Test of Basic Skills						
Vocabulary	.22	.52	.11	.18	.54	.04
Reading	.21	.51	.10	.23	.61	.08
Language	.29	.54	.19*	.36	.57	.25*
Arithmetic	.20	.46	.10	.17	.52	.03
Spelling	.35	.50	.28*	.23	.42	.14
1968 OP	--	.24		.51	.18	
1966 IQ	.24	--		.27	.73	
1969 OP	.51	.27		--	.27	
1969 IQ	.18	.73		.27	--	

N = 116

* p .05

19

22

Experimental Validation. Experimental validation
was based on assessment of effects of intensive class-
room motivation training carried on in some of the
sixth and seventh grade classrooms as part of a large
project funded by the Carnegie Corporation (de Charms,
1965, de Charms, et.al., 1969). Table 7 presents
mean Origin-Pawn scores for groups of the same subjects
at the end of each of three years. They were all
measured at the end of their fifth grade before any
training. They were then divided on a random basis
into experimental and control groups for training
(or none) in their sixth grade year. Each of these
two groups were again subdivided into experimental
and control for training (or none) in their seventh
grade year. This design results in four groups:
(1) trained in both sixth and seventh grades, (2)
trained in sixth only, (3) trained in seventh only,
(4) not trained at all. The effects of training on
the mean Origin-Pawn score are shown in table 7.

Insert Table 7 about here

VII. DISCUSSION
In general, the stability and homogeneity of the
Origin-Pawn measure are all of the order that might
be predicted from this type of measure. It is a mis-
take, however, to expect data comparable to those
based on objective tests such as standardized achieve-
ment tests or questionnaires. This is a measure of
more freely emmitted responses. These procedures
for assessing reliability were developed for what
McClelland (1965) called a respondent measure rather
than the more common operant measure. In the operant
measure the subject is allowed freedom to produce
his own responses (stories) and the psychologist
must find ways (content analysis) to assess his responses.

.20

Table 7

Mean Origin-Pawn Scores in Four
Experimental Cells
(From Plimpton, 1970)

	5th Grade (pre-training)	6th Grade	7th Grade
Cell 1 (Training both years)	5.86	12.89	16.33
Cell 2 (7th Grade training only)	4.39	4.88	11.60
Cell 3 (6th Grade training only)	4.29	11.89	11.48
Cell 4 (No training)	5.68	6.26	5.40

In the respondent measure (questionnaires) the psychologist defines the number of answers which the subject can use. The subject is responding to what the psychologist has presented in a predetermined form. The Origin-Pawn measure is an attempt to find out about the subject at his level -- what he will do on his own, not what he can do when specifically instructed to.

In this light the measures of reliability of the Origin-Pawn measure are quite satisfactory when compared, for instance, to the similar and well established measure of n Achievement. McClelland (McClelland, et.al., 1953) reports interscorer reliabilities measured by percentage of agreement of 78, 85, and 91 percent for n Achievement (p. 186). In the years since the n Achievement measure was developed it has been customary to strive for 90% agreement. A spilt-half reliability similar to that reported here was reported for n Achievement (p. 188) to be +.65. The two Origin-Pawn reliabilities from our data reported in Table 1 that can be compared to that for n Achievement are those for the third sample (Controls) and the fourth sample (Controls). The first (+.35) is inferior, but the second (+.79) is higher than the n Achievement figure.

Repeat reliabilities for a measure of motivation are also problematic. Much can happen to a person's motives between measures, especially when the intervening interval is one year. Nevertheless the repeat reliabilities reported here for the Origin-Pawn measure are substantially larger than one reported by McClelland et. al. (1953, p. 192) for n Achievement. They reported a correlation of +.22 for equivalent forms of the n Achievement measure administered one week apart. For the Origin-Pawn measure administered a year apart the test-retest reliability is +.41 for one sample and +.38 for another. In our own data the test-retest reliability (a year apart) for n Achievement was +.29 for a sample of 185 subjects.

22

25

The data presented in Table 5 concerning discrimin-
ant validity are not very revealing. The correlation
between the Origin-Pawn measure derived from the stories
and alternately from the Children's Picture Test is
-.12. This result, where a positive relationship
would be expected, may be attributed to the differences
between the two methods of collecting data (imagina-
tive stories vs. the cartoons of the Children's Pic-
ture Test). Unfortunately, however, it can also
be attributed to the possible unreliability of the
scoring of the Children's Picture Test. It had been
hoped that this scoring could be developed to a point
where a valid comparsion could be made, but when this
negative correlation was found it was decided to ter-
minate perfecting the content analysis of the Children's
Picture Test for the Origin-Pawn measure and to con-
centrate entirely on the manual for the Imaginative
stories which produced a much larger sample of thoughts
that had already been demonstrated to yield a reliable
and valid measure of $\underline{n}$ Achievement. In Table 5 it
can be seen that the Origin-Pawn measure from the
imaginative stories does correlate with goal realism
($+.32$, $\underline{p} < .05$). This is a first step toward assessing
predictive validity.

The predictive validity of the Origin-Pawn
measure was assessed in this project primarily by
relating it to standardized measures of academic
achievement. The goal was to determine a non-intell-
igence type test of motivation that would predict a
significant amount of variance in academic achieve-
ment independently of intelligence. It was not expected
that a large proportion of the variance would be
accounted for and it was not. The first order corre-
lations between the Origin-Pawn measure and the mea-
sures of academic achievement are all small, but on
the language subtest of the Iowa Test of Basic Skills
the correlation is significant even with I.Q. held
constant. That is, on the language test (replicated
twice) the Origin-Pawn measure increases our pre-
dictive ability when used in conjunction with I.Q.

23

and independently of it. In the sixth grade the
Origin-Pawn measure also accounts for significant
variance in two spelling tests independently of I.Q.

The most striking results of this project come
from the experimental validation. There is no question
that the classroom motivation training to be more
motivated strongly and significantly affected the
scores on the Origin-Pawn measure. In every case
where training intervened between testing periods
the mean score increased very significantly
($p < .001$). In no case where training did not interven
in a comparable period did the scores increase sign-
ificantly. Most interesting also is the finding that
one year of training increases the mean score and
after a year of no training the effects of the train-
ing have not dissipated at least as measured by the
Origin-Pawn measure.

Theoretically it seems justified to say that
the Origin-Pawn measure has been demonstrated to be
sufficiently reliable and valid to be used for experi-
mental purposes. More work needs to be done in estab-
lishing its discriminant and predictive validity.
It does predict significant variance in language
measures and in a goal realism measure and it responds
sensitively to classroom motivation training.

Practically the measure is not and was never
intended to be an instrument for assessing or diagnosing
individual students. The results reported here show
an encouraging start in developing a measure for
experimental use and further work is in progress
(de Charms, 1971) that will give further evidence
for predictive validity of the measure. In the
larger project (de Charms, 1965) of which this was
only a part it has become evident that the measure
is a valuable tool for measuring the effects of motiv-
ation training, but that simply to measure and try to
predict academic achievement is not nearly as reward-
ing as attempting to produce changes through motivation
training.

24

REFERENCES

Atkinson, J.W. (Ed.) (1958). *Motives in fantasy, action, and society*. Princeton, N.J.: Van Nostrand.

Battle, Esther, & Rotter, J.B. (1963). Children's feelings of personal control as related to social class and ethnic group. *J. Pers.* 31, 482-490.

Bridgman, P.W. (1959). *The way things are*. Cambridge, Mass.: Harvard University Press.

Brown, W., Some experimental results in the correlation of mental abilities, *Br. J. of Psych.* 3, (1910), 296-322.

Carpenter, Virginia L. *Motivational components of achievement in culturally disadvantaged Negro children.* Unpublished doctoral dissertation. Washington University.

Coleman, J.S. et. al., (1966). *Equality of educational opportunity*. U.S. Government Printing Office. Document No. FS5.238:38001.

Crandall, V.J., Katkovsky, W., & Preston, Anne. (1962). Motivational and ability determinants of young children's intellectual achievement behaviors. *Child Development*, 33, 643-661.

De Charms, R. (1968). *Personal Causation.* New York: Academic Press.

De Charms, R. (1971). *Motivation in the schools*. To be published.

De Charms, R. (1969 in preparation). From Pawns to Origins: Toward self-motivation. To appear in *Psychology and the Educational Process*, Lesser, G.S. (ed.). Scott, Foresman, & Co.

25

De Charms, R. (1965). A proposal to study achieve-
ment motivation in culturally disadvantaged elem-
entary school children. Submitted to the Carnegie
Corporation.

De Charms, R., & Carpenter, V.L. (1969). Measuring
motivation in culturally disadvantaged school
children. In Klausmeier, H.J. & O"Hearn, G.T.,
Research and Development Toward the Improvement
of Education. Madison, Wisconsin: Dembar Education-
al Research Services.

De Charms, R., Collins, Janet R., Jackson, K.W., &
Shea, D.J. Can Motives of Low Income Black Children
be Changed? Symposium presented at the American
Education Research Association Meetings, February
7, 1969. Los Angeles, California.

Feigl, H. & Scriven, M. (eds.). (1956-1958).
Minnesota studies in the philosophy of science.
Vols. I & II. Minneapolis: University of Minn-
esota Press.

Heider, F. (1944). Social perception and phenomenal
causality. Psychol. Rev., 51, 358-374.

Heider, F. (1958). The psychology of interpersonal
relations. New York: Wiley.

Holsti, O.R. (1969). Content Analysis. In The
Handbook of Social Psychology, 2nd Edition.
Lindzey, G. & Aronson, E., editors. Cambridge,
Mass: Addison-Wesley.

Kuperman, A. (1967). Relations between differential
constraints, affect, and the origin-pawn variable.
Unpublished doctoral dissertation. Washington
University.

Lorge, I. & Thorndike, R.L., Lorge-Thorndike Intell-
igence Tests (manual). Boston: Houghton-Mifflin,
(1954).

26

McClelland, D.C. (1961). The Achieving Society. Princeton, N.J.: Van Nostrand.

McClelland, D.C. (1965). Toward a theory of motive acquisition. Am. Psychol. 20, 321-333.

McClelland, D.C., et.al. (1953). The Achievement Motive. New York: Appleton-Centruy-Crofts.

Margenau, H. (1950). The Nature of Physical reality. New York: McGraw-Hill.

Moynihan, D.P. (1967). The Moynihan Report: The Negro Family: The case for national action. In Rainwater, L. & Yancey, W. The Moynihan report and the politics of controversy. Cambridge, Mass.: The M.I.T. Press.

Polanyi, M. (1958). Personal Knowledge. Chicago: University of Chicago Press.

Rotter,J.B. (1954). Social learning and clinical psychology. Englewood Cliffs, N.J.: Prentice-Hall.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychol. Monogr., 80, (1, whole No. 609).

Scott, W. (1960). Measures of test homogeneity. Educ. Psychol. Measmt., 20, 751-757.

Shea, D.J. The effects of achievement motivation training on motivational and behavioral variables. Unpublished doctoral dissertation. Washington University.

Spearman, C. (1910). Correlation Calculated from Faulty data. Br. J. of Psychol., 3, 271-295.

27

White, R.W. (1959). Motivation reconsidered: The concept of competence. _Psychol. Rev._, _66_, 297-333.

Winterbottom, Marian, R. (1958). The relation of need for achievement to learning experiences in independence and mastery. In J.W. Atkinson (ed.), _Motives in fantasy, action, and society_. Princeton, N.J.: Van Nostrand.

28

31