DOCUMENT RESUME

ED 132 459 CG 007 105

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TITLE A Model for Counseling and Human Development.
PUB DATE 4 Apr 72
NOTE 9p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, Illinois, April, 1972)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Counseling Effectiveness; *Counseling Theories; Educational Diagnosis; *Elementary School Counselors; *Human Development; Intervention; Mental Development; *Models; *Secondary School Counselors; Speeches; Student Characteristics; *Student School Relationship

ABSTRACT

Six basic assumptions are necessary for the counselor to function effectively in a school setting. (1) There exists a relationship between the individual's performance (physical or psychological) and his ability (used or not used). (2) The performance of the client is modifiable. (3) The force or forces affecting the developmental pattern can be identified and its (their) effect(s) on the organism can be established. If more than a single force is operating then the interaction effect of those forces can be established. (4) There exists or can be developed a diagnostic procedure which can be used by the counselor to write a prescription to alter the established vectors. (5) Where appropriate the prescriptions can be applied by the classroom teacher. (6) Intervention in and modification of the child's developmental course is not a legal question. Mathematical formulas to predict the individual's level at any defined time are explored. (KS)

A Model for Counseling and Human Development

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It is my belief that in order for the counselor to function effectively in today's school setting he must hold the following six postulates to be true.

1. There exists a relationship between the individual's performance (physical or psychological) and his ability (used or not used).
2. The performance of the client is modifiable.
3. The force or forces effecting the developmental pattern can be identified and its (their) effect(s) on the organism can be established. If more than a single force is operating then the interaction effect of those forces can be established.
4. There exists or can be developed a diagnostic procedure which can be used by the counselor to write a prescription to alter the established vectors.
5. Where appropriate the prescriptions can be applied by the classroom teacher.
6. Intervention in and modification of a child's developmental course is not a legal question.

The first postulate holds that the counselor can refer the client to appropriate remedial agents if the client appears not to be functioning at a level characteristic of the client's peer group. If the performance can be determined to be not of physical origin the psychological domain needs to be assayed. This does not say that the problem can be identified to be non-physical, for I am sure that the medical profession has not identified all of the physical ailments that man can incur. If we rule out the physical bases for the problem then a diagnosis of the individual's psychological state is

Symposium paper for Annual Meeting of AERA, Chicago, Illinois, April 4, 1972.

called for. Here in lies a major problem for the counselor. The individual's psychological domain is extremely difficult to determine.

If the counselor at any point in time relies on a paper and pencil measure, he is forced to face at least two conflicting theories. One, that there is stability in the developmental course that the individual is following. Bloom's (1964) work dealing with the stability and change with individual is a good example for this position. The other extreme would be the "Here and Now" position which tends to ignore the developmental history, within limits, and tries to manage the problem as it is. This position tends to be followed by the behavior modification people.

The second postulate holds that the performance is modifiable. If it is not, the counselor has no function in that specific instance.

The third postulate is extremely difficult for the counselor to hold to. If all things are relative then one must assume that the forces effecting the client are constantly changing and he can deal only with those forces which seem to have some permanence. While this statement appears to be contradictory it is not if one holds that the rate of change is a critical factor. Where the rate of change produced by the force is extremely rapid the counselor may have no function or if the forces effecting the organism are rapidly changing, the counselor may have no function. Where the acting forces seem to be permanent the counselor may be able to effect change if the forces can be identified and if they are manageable. The above would also hold true for the interaction effects.

The fourth postulate appears to have face validity. To diagnose without being able to prescribe has only the value of knowing what is wrong without hope of correction at the time. Obviously there is hope that the problem

will be solved in the future with remedial procedures instituted at that time.

The fifth postulate states that in a number of instances the counselor can supply the classroom teachers with procedures that will enable them to do a more effective job with the client as well as improving the client's classroom performance.

Postulate number six is one that greatly disturbs me. While we must believe that intervention by a professional is a basic good, do we really have the right to intervene and insult the developmental pattern established by the individual. To what degree are we violating the individual's civil rights. I am sure that there are areas where this is justifiable but I am also certain that there are a number of marginal areas.

There are, I am sure, a number of other postulates that a counselor would hold to be true. I have not attempted to identify all of them. As a developmentalist I see the above six postulates to critical for the counselor.

What are some the things that I see the data saying as I look at the individual from a developmental point of view?

In the area of physical development there appears to be a great deal of stability to the growth pattern of the individual. Height for example can be described rather precisely with at least two different mathematical equations that I know. One is the Gompertz (1825) equation employed by Courtis (1933), Deming (1957), Marubini et al (1971), Nally and Delong (1952), Greenshields (1958), and others. The Gompertz equation as employed by Marubini et al (1971) is $Y = P + Ke^{e^{a-bt}}$

Y = dependent variable, i.e. standing height (cm)

t = independent variable, i.e. age (months/100)

P = lower asymptote

K = amount of height gained over period studied

a = constant of integration

b = rate constant

Another equation was also used in the Marubini et al article that yielded an excellent description of height growth for adolescent girl. The equation is a logistic equation as follows $Y = P \frac{K}{1 + e^{a-bt}}$ with the elements of the equation having the same definition as the Gompertz presented above. The authors found that the standard deviation of the residuals for both the Gompertz and the logistic were of the magnitude of 1.0 cm. This study however, was concerned only with girls covering the adolescent cycle of development.

The studies by Courtis (1933), Greenshields (1958), Nally and Delong (1952) cover longer periods of time and found the average error residual to be within ½ of an inch.

In preparation for this paper, I tried to extend the application of the logistic equation as used by Marubini et al (1971). Using the boys height data reported by Tuddenham and Snyder (1954) but limiting it to the data points starting at 21 months thru 222 months. This limitation yielded 28 data points for each individual. The average constants found by Marubini et al (1971) were used in the equation. The average error was far beyond an acceptable limit. However the fit was exceptionally good for the last three years of growth (15-18 years) regardless of sex. By adjusting the independent variable (time) the average error of fit was 3.32 cm. From 180 months to 222 months the average error was 1.08 cm.

A least squares fit was also employed over the same age span, 21 months to 222 months. In nearly every case the least squares fit was better than the logistic. However, at the critical point, the maximum, the linear function was extremely poor for describing the data. Over the 180 to 222 months period, the linear function has an average error of . Using the adjusted time line the logistic fit was better than the linear fit for every girl.

Spurred by this success I applied the logistic and linear function to a random sample of 30 cases from the Third Harvard Study (1938). This time, however, the dependent variable was mental age. The two mental ages reported for each age point were averaged starting at age 10 years. The results as you might expect, greatly favored the linear function. The residuals for the linear function averaged less than 6 months for nearly every case, 22 of the 30. The data clearly indicated a cyclic function supporting Clark's work of 1958. Courtis' modification of the Gompertz seems to be the best way yet for describing mental growth.

What does this all mean as regards a model for counseling and human development? We obviously need to know where the individual has been and where he is currently for the above data strongly imply that there is a great deal of stability to the individual's developmental pattern. We can literally project from some early point to a much later point in the individual's life. However, I am convinced that what we should project is a band of growth for the individual. There are two major reasons for this: (1) the natural variation that occurs within each individual, (2) the error due to measurement. Furthermore, we need to think of the growth under consideration as occupying a space rather than a single point. With the

imprecision of most of our measuring devices for psychological growth this space is difficult to define.

It is further implied that the measurement may have to be made thru an access, such as a sense modality, not previously considered. From the standpoint of measurement the concept of a band of development is nothing new. Confidence limits have long been used to convey the idea of a band. It is difficult however, when it comes to predicting behavior to avoid the point prediction for it implies precision so necessary to the scientist. But because of the false security generated by most predictive techniques, to know that a particular test has high predictive validity, makes one feel confident in its usage as long as one is working with a short time span. As the time interval increases the reliability of the instrument lessens in most instances. Yet we tend to feel comfortable enough if the reliability coefficient is .70 or better. As an example, Bloom's (1964) statement regarding intellectual development have had tremendous impact inspite of the fact that a linear function for describing or predicting growth is of little value.

Utilizing a band concept we need to describe the individual using the upper and lower limits of his variability at least to the degree that we are able to define those limits.

The band that results is best described by a curvilinear function even though the measures taken longitudianlly have a linear base.

For some individual the bands are relatively narrow, well within the standard error of measurement for the device employed. There are, however, a number of individuals whose developmental bands are extremely broad indicating wide fluctuations in their developmental patterns. This position

assumes of course that the measurements do indeed indicate the individual's level at that time. Unless we are systematically measuring the individual through time we are in a position where Postulate 1 may become untenable.

It is difficult for some to accept the role of predeterminism in human development. Our ability to predict future behavior is based on the fact that performance has stability and that the performance has a real base in the individual. The degree to which the performance is rooted in the individual's biology has some effect also on Postulate 2. There are probably limits to which an individual can be pushed or held down without seriously jeopardizing the health of the individual.

In summary, I believe that most counselors hold to the six postulates stated above. The degree to which each of those six postulates in a positive sense can be assumed to be operating and the degree to which, in a position sense, a counselor is able to evaluate the individual in terms of the six postulates will determine his effectivness as a counselor.

To this writer, the data indicate that the human organism is predictable yet in many instances variable. His development is cyclic consequently linear functions for describing his development are inadequate and extremely mis-leading.

The logistic equation employed here has some merit especially for describing the individual as he moves through his last years before reaching his maximum.

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