

A POISSON ANALYSIS OF ADOLESCENT'S LOVE OF PARENTS

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CHILD'S ORIENTATION TO THE PARENT

In the child's orientation to the parent, the crucial issue is not the "objective situation," but the perception of the situation as understood by the child. The child will react as if his definition of the situation is accurate, and for him, his definition represents reality. Assuming the importance of the effect of parent-child interaction on the development and future orientation of the child, we hope that this study will help to interpret some of the intervening elements of information about children and their relationships with their parents. The relationship between children and parents influences the child's attitude about decision making and social relationships in his later life (Luckey, 1960)

Several studies have concentrated on the perception of parents by young children (Brenzitz, 1965; Schvaneveldt, 1970), and by somewhat older children (Kagan, 1956; Duvall, 1969). This study will focus on older adolescents of high school age. A somewhat closer affective tie and expression of love has been found between children and parents of the same sex. College students reflected a higher affect for the same sex parent in a study coding Parsons' "affective-neutral" pattern variable in content analysis of verbatim protocols (Allen, 1969). This supported an earlier study of emotional behavior reported by boys and girls in relation to the same sex parent (Droppelman, 1963). More detached emotional behavior was reported by boys and girls in relation to the parent of the opposite sex. The closer affective tie was with the parent of the same sex.

There appears to be a much higher level of sentiment and communication between parents and teen-age children than is implied by the mass media. According to Elkin (1955) the continuity of parental socialization for adolescents is more striking than the discontinuity. Much joint participation in activities between parents and their adolescent children has been found, and adolescent children frequently

seek guidance and advice from their parents.

ASSESSED CHANGE IN THE LOVE RELATION

Previous studies have shown that young children show a stronger affective tie to the same sex parent, and that the affective tie persists through the adolescent years. The question then arises as to whether the relation is an increasing or decreasing function of age. This study will examine evidence as to whether there is a trend to reduction of the adolescent's affective tie toward both parents. Such a trend could be inferred from the distribution of responses to a Likert scale, if the pattern of the distribution could be shown to follow a well-recognized form of mathematical distribution with reasonable consistency. The Likert scale should consist of an ordinal series of steps on a credible underlying continuum. The scale intervals of the Likert scale are often scored and analyzed mathematically as if they represented equal intervals, although this is not one of the assumptions of the Likert scale. In the present study, the affective scale to record the child's love for the parent was "Unlimited -- Very Strong -- Strong -- Not Very Strong -- Weak," and the scale for the child's rating of the parent was "Excellent -- Good -- Average -- Below Average -- Poor." Such scales have commonly been equated to "grade points" for the calculation of overall academic performance in schools and in universities. Admittedly, the scale may not have a priori consistency, but in many applications it does operate with apparent consistency. If the responses to a Likert scale were distributed in a regular pattern of increase or decrease from one end of the scale, a clear possibility of some prior process to create such a uniform distribution would exist.

In the relation of the child to the parents, many social bonds, conventions and processes combine to maximize the child's affection and regard in the pre-school period and in the early school years. Among these are the child's extreme dependency for daily physical needs, the general absence of alternatives to the parents' influence and control, the child's response to the routine gratifications received from both parents, and particularly the mother. The parents' great physical

size and social authority, relative to that of the child impresses the child. He looks on them, not only as his only dependable resource for the present, but also as his ideal model for his own future growth. The modern nuclear family functions to intensify these effects due to its very small size and its extreme privacy. Living in a detached house, with little contact with neighbors or relatives, it is probably unavoidable that the young mother, at home all day with her preschool child, would intensify her influence on him, since neither has such a constant and immediate social alternative.

According to this model, the young child's affection and regard for his parents would be maximally positive during his earlier years. Social conventions and the expectations of others would serve to sustain such attitudes for a considerable time. Regardless of the absolute quality of the parental relation, the child, lacking any comparative standard, would tend to evaluate his own home and family in the most favorable terms. As children mature into the early adolescent years, the variable shocks of social experience begin to provide extrafamilial criteria for judging parents, home, the self, and other family members. In this process, some children will begin to revise their evaluations in the negative direction. Presumably, these downward revisions occur in a series of small adjustments. If that is the case, we could expect a general tendency for most children to remain in the more favorable state of regard for parents, and for those who do change to pass progressively through all intervening states. Moreover, those children who do change might be expected to exert and to receive influence in association with other children like themselves, and thus to add an element of social contagion to the process of revising their opinions of their parents in the negative direction.

THE POISSON MODEL

The Poisson model provides a reasonably good approximation to the social processes which we have tentatively identified in the development of the child's attitudes toward his parents. The Poisson model describes a probabilistic or stochastic process involving a sequence of adjacent states through which a population of individuals may

progress at predictable rates of transition. Coleman provides the following rationale: (1964, 291)

The appropriateness of the Poisson process for social phenomena lies not in its empirical fit to social data; it lies instead in the assumption on which the distribution is based. It deals with numbers of elements, or proportions, and numbers of events. Therefore, continuous variable measurements, which are rare in social sciences, are unnecessary. The Poisson process occurs continuously over time, rather than at discrete trials. Thus for naturally occurring events, in contrast to controlled experiments, something akin to the Poisson process is often appropriate. It is a process appropriate to social phenomena because it constitutes a rational model whose assumptions can mirror our assumptions about actual phenomena. Thus it need not be simply an empirical frequency distribution like the normal curve.

Assume that there is a large number of individuals and a certain kind of events which can happen to them. The states of these individuals may be labeled 0, 1, 2, ... representing the number of events which have occurred. Initially each unit is in state Zero, and is subject to the possibility of a recurrent event. The likelihood of this event happening in any unit of time is alike for all those individuals and can be estimated by the total number of individuals to which the event has happened, over the span of time divided by the number of individuals to which the event has happened. The resulting number is the transition rate. After the event has happened to an individual, putting him in a new state, he is immediately subject to the same chance of a new event with no delay. These assumptions permit calculating the expected proportion of persons to whom no events have occurred, those to whom one event has occurred, and so on. There is a great number of elements to which an event can happen, and the transition rate governing the occurrence of this event is Alpha. Once an event has occurred for an element, it continues to be affected by the same transition rate as before. The Poisson distribution is the distribution of elements in each of the states of the ordinal sequence.

If the transition rate is increased as a result of the first transition from state 0 to state 1, due to reduced resistance after the "first time," or due to increased social pressure, exposure, or experience, we have a Contagious Poisson process. The Contagious Poisson includes the basic transition measure, Alpha, and a second contagion measure called "Beta," which marks the added likelihood of the occurrence of the event, due to "contagion" from others in the same state at the same time. The contagion factor, "Beta" applies only after an element has made the transition from state 0 to state 1.

The following formulas are used in calculating the two forms of Poisson distribution in Tables 1 and 2.

Terms:

- i is series of transition states.
- e is base of natural logs.
- a = transition rate between states.
- b = added transition rate after $i > 0$.
- p = proportion expected in a state.
- p^1 = proportion observed in a state.
- m = estimated mean proportion of series.
- s^2 = estimated variance of proportions.

Simple Poisson:
$$p_i = \frac{a^i e^{-a}}{i!}$$

Contagious Poisson:

$$p_i = \frac{a(a+b) \dots (a+(i-1)b) e^{-a} (1-e^{-b})^i}{i! b^i}$$

$$m = \sum i p_i \quad s = \sum i^2 p_i - m^2$$

$$b = \log_e \frac{s^2}{m} \quad a = \frac{m^2 b}{s^2 - m}$$

The predicted numbers are calculated from the Poisson proportions. The chi squared statistic is calculated to measure the difference between observed and predicted numbers. A low chi squared value with a high probability indicated a good agreement between observed and predicated values.

SAMPLE CHARACTERISTICS

The sample included all students attending high school in Logan County, Oklahoma on the day of the survey. A total of 763

students returned usable questionnaires, and 18 questionnaires were spoiled, face-tious, or incomplete. In the case of 327 students, both parents returned the parental questionnaires regarding the children's academic and personal characteristics. The students' responses on love for each parent and the rating of each parent provide the sample for this analysis. Although Logan County is classified as "rural" only 22 percent of all students indicated that the family income derived from agricultural sources such as farm crops and livestock. The six high schools were small, consolidated, community type schools. Further consolidation reduced the number of high schools to five at the end of 1968, the year the survey was taken. The students in the subsample come from complete nuclear families with relatively cooperative parents. Missing from the sample are students who were ill, truant, or excused from class to perform routine school services, and one student who refused to evaluate his parents, apparently due to a severe domestic disturbance in the family. The questionnaires were explained and administered by regular classroom teachers in English classes (required for all students), using written instructions prepared by the research team. These teachers had been fully briefed on the content and format of the questionnaires. According to teacher reports, the students readily understood and responded to the instrument.

POISSON APPROXIMATION OF LOVE RESPONSE

Based on the observed values in Tables 1 and 2, the responses of boys are almost identical to those of girls relative to love of mother ($X^2 = 2.3, df = 4, p = .66$) and love of father ($X^2 = 1.1, df = 4, p = .91$). The rather regular pattern of rapid decline in frequency of observed responses in all four tables suggests that a negative exponential function could consistently describe the distribution. If such were the case, we might be in a position to develop certain insights into the nature of the underlying dynamics of the child's love for his parents.

The attempt to fit the observed distributions with the simple Poisson was not very successful. In the eight applications of the simple Poisson for boys and girls for both parents for love and rating as a parent, four comparisons of observed and

TABLE 1 - SIMPLE AND CONTAGIOUS POISSON ANALYSIS OF CHILD'S ESTIMATED LOVE FOR MOTHER

Boys' Love	Observed	Predicted Poisson	
		Simple	Contagious
No limit	72	64.8	68.6
Very strong	39	51.7	47.3
Strong	25	20.7	19.5
Not strong	6	5.5	6.3
Weak	2	1.1	1.7
Total	144	143.8	143.0

Girls' Love			
No limit	96	88.1	93.6
Very strong	45	57.4	50.0
Strong	21	18.7	17.9
Not strong	5	4.1	5.3
Weak	2	.7	1.4
Total	169	169.0	168.5

Boys, Girls (B,G)	B	G	B	G
alpha	.80	.65	.74	.59
beta		.15		.20
χ^2	4.5	2.6	4.4	.8
probability	.35	.63	.36	.94

TABLE 2 - SIMPLE AND CONTAGIOUS POISSON ANALYSIS OF CHILD'S ESTIMATED LOVE FOR FATHER

Boys' Love	Observed	Predicted Poisson	
		Simple	Contagious
No Limit	74	64.7	69.3
Very strong	42	57.8	52.8
Strong	30	28.5	24.0
Not strong	9	7.7	8.4
Weak	3	1.7	2.5
Total	158	157.7	157.0

Girls' Love			
No limit	84	71.2	80.1
Very strong	44	61.5	52.1
Strong	27	26.6	23.4
Not strong	8	7.1	8.9
Weak	6	1.7	3.1
Total	169	168.7	167.6

Boys, Girls (B,G)	B	G	B	G
alpha	.90	.82	.86	.75
beta		.16		.28
χ^2	6.2	3.3	15.	3.4
probability	.18	.51	.01	.50

predicted values indicated substantial differences by the significant chi squared values. The single transition rate could not adequately account for the shifts from the higher, more approbative state to the adjacent lower state. The Contagious Poisson was far more successful for predicting the observed distribution. In all applications, the chi square values were sufficiently low to demonstrate that chance variation could account for the differences. This suggests that the distribution can be described consistently by an exponential function incorporating two transition rates, one of which operates as a basic transition function for all elements over all states. The second is probably a contagion factor, and it does not operate until an element has shifted from the initial state 0 to state 1. Elements in the initial state are influenced only by the basic transition rate, and the elements in all lower states are influenced by two transition rates, which tends to draw a larger portion of the population down into the tail of the distribution. Instead, the impact of the social environmental events accounts for the basic transition rate, here indicated by Alpha. The contagion factor, Beta, derives from the increased readiness of those who have made one shift between adjacent states to make an additional shift. In part, it could be influenced by association among those who have made a shift, but the present data offers no evidence on that point.

A review of the Alpha values indicates the transition rates regarding evaluation of the father are substantially higher than the Alpha values for the mother, and that there may be more resistance to reevaluating the mother among both groups. The fact that the bulk of the ratings in all four applications are retained in the two most favorable evaluation levels in the late adolescent period indicated a strong conservation of regard for parents. The assumption that those who have responded with lower evaluations must originally have been in the state 0, the most favorable state, implicit in the application of the Poisson formulation has no firm support from this data, and therefore rests solely on face validity. It seems reasonable to think that those who place a low evaluation on their parents must have reached such an attitude level only after a series of reevaluations. Of course, other formulations of the Poisson

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general moral position (Erskine 1972-1973). The moderating of the earlier anti-war attitudes indicated in the later sample illustrates the marked shifts in public opinion as their perception of the situation shifts.

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GROSS (Continued from page 208)

moral thinking, a person thinks with the subtlety of a relativist, but is capable of putting him/herself in the shoes of the rest of the World's people. This quality of enlightened empathy is the bedrock of principled thinking.

. Kohlberg's focus is narrower, and consistently aims at the cognitive antecedents of moral behavior. His levels are levels of understanding. Perry's commitment involves decision. Kohlberg is more directly involved than Perry in the content of moral behavior. Kohlberg's research reveals broad moral universal principles. For the reader interested in moral development, there is opportunity for a penetrating look into the thought and value patterns of a group of elitist students in Perry's work. Kohlberg offers a more comprehensive perspective with a much wider range of articles and empirical studies.

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process may include a reverse flow, and the rating process inherently permits reevaluation in both directions. The distributions seen here, however, are much more consistent with the hypothesis of a net downward flow which operates at a very restrained pace over the early part of the life cycle.

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