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ABSTRACT

During socialization, individuals begin to understand increasingly broader and more abstract units of personal and social reality. Subjects (N=97) ranging in age from 13 to late middle age completed a linguistic task in which they could impose higher order conceptions on lower order descriptions by identifying different level similarities within sets of three situations. Results demonstrated the usefulness of a hierarchical system of organizational levels for investigating the development of social knowledge. Subjects were less successful overall in finding higher level similarities, and showed a preference for the level of action. The developmental differentiation of conceptual abilities seems to enable a progressive competence at conceptualizing in terms of additional higher levels of organization, as older and better educated subjects show increasing facility in operating across higher levels. (Author/NRB)

Levels of Organization and the Development of Social Knowledge

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During the course of socialization, a developing individual comes to know and understand increasingly broader and more abstract units of personal and social reality. The purpose of the present research was to take an initial step toward articulating a theoretical system for demonstrating and exploring this basic thesis. Such a system emerged from a conception of distinct levels in our organization and experience of reality. Higher levels are increasingly abstract and consist of emergent properties.

What is at issue is not merely complexity. Higher levels are not simply decomposable into parts and interrelations (Simon, 1962). Higher levels have a qualitative newness -- each level has emergent features due largely to the particular organization of the parts. As a result, each level has a certain autonomy. Because higher levels are the organization of lower level elements does not make higher levels more complex - at least not when considered on their own terms, which are the very terms that constitute the level. Comparisons of complexity across levels don't really make sense - like asking which is more complex: the U.S. Government or a human liver.

Emergent features are the key to new levels, but more can be said: Lower level entities or events are supportive of higher levels, e.g. no particular actions are required for someone to be called friendly, but some actions are. They are necessary but not sufficient (empirically, of course, lower level events may provide constraints: one does not have to smile to be happy, but it is harder to be happy without smiling). Alternatively, higher levels are directive: they provide organization, coherence, and meaning. E.g. institutions are supported by the existence of buildings and tools, and are given direction by their role in the larger society.

Mullener and Laird (1979) articulated a number of levels for categorizing

observations about persons. The present research builds on and extends their work. Their system includes five levels:

1) Objects or body parts in motionless state.

2) Movements. These involve relations between level 1 units. The same object or body part at two different places at two different times can be characterized as a movement. Movements are short duration events like fist clenching or mouth wagging.

3) Behaviors. These involve movements and their context or outcome, or coordinated patterns of movement. These are slightly longer duration events like laughing, smiling, or showing teeth (note that these last two might involve very similar movements).

4) Actions and Feeling. These involve a relation between person and context. They are the effects, usually conscious or intentional, of behaviors or patterns of behavior. These refer to a particular state or accomplishment, like being happy, thinking, going to the store, or playing tennis.

5) Dispositions. These involve relations between actions or feelings taken across time: traits, abilities, long term beliefs, motives or attitudes. They usually involve repetitions of level 4 events: being a tennis player involves playing tennis alot, being a jolly person involves being happy alot.

We have extended this system to include two further levels:

6) Roles and Relationships. These involve coordinations of dispositions within individuals (trait complexes like athlete or intellectual) and between individuals (personal relations like friend, advisor, student).

7) Groupings. These involve relations between roles and relationships, where there is some kind of role specialization or institutional character: families, crews, clubs.

Mullener and Laird looked at the usefulness of different levels for different sorts of reports. The upshot of their research was that levels 4 and 5

had different utilities for short term interactions. It is the present claim that for longer interactions, for relationships, for evaluations of ones life and its meaning or ones place in the world, and for addressing social issues, higher levels are more useful. Further, we hypothesized that this utility increases as people mature and age and these larger considerations become more important. This is not to claim that conceptions of higher levels of organization become common in day to day living, but that one's facility with such conceptions should increase over the life-span.

By using a system of levels of organization to explore the development of social knowledge, we hope to avoid some of the limitations of traditional research on person perception and social cognition. We avoid a focus on the perception and cognition of single individuals. We avoid viewing higher level conceptions merely as vehicles for describing and predicting behavior, rather than as constituting its meaning. Furthermore, the levels of organization scheme can better address the relations between different levels of functioning within and between individuals.

Of course, some of the earlier work pointed the way. Livesley and Bremley's classic (1973) work documents a progression from conceiving of persons in terms of appearances and circumstances to conceiving of persons in terms of dispositions and regularities. They also mention a nascent ability of adolescents to think about coordinations of such dispositions. Kohlberg's (1976) highest stage of moral development certainly involves a supra-individual orientation. The literature on attachment (cf. Baltes, 1978) indicates the possibility of emotional involvement with larger social entities. Finally, Turiel (1978) indicates that, at least through age 25, individuals see themselves more as part of larger social groupings.

The goal of the present research was to begin a more systematic follow-up to these sorts of clues. The assertion here is that a well defined, logically

hierarchical system of organizational levels could be used as a theoretical tool for investigating the development of social knowledge, particularly beyond its present bounds and further into the life-span. Given evidence that abstract abilities come later in ontogenesis, and the assumption that the emergence of thinking about and operating on higher organizational levels is likely to more strongly tax such abilities, it was hypothesized that competence at and general use of higher levels of organization should, subsequently, also come later. Research indicates that formal operations are applied to social later than to physical entities and events (Keating and Clark, 1980). The goal is to elucidate this finding via a system of levels that clarifies increase in abstraction as a decrease in ties to specific space-time loci.

Method

Ninety-seven subjects were employed, ranging in age from 13 to late middle age. Subjects were divided into five groups of about 20 subjects each, corresponding to ages usually found in junior high, high school, college, young adult, and middle age. Subjects were all paid volunteers, solicited in and around a university community.

A linguistic task was set up in which subjects could impose higher order conceptions on lower order descriptions of situations. Such descriptions could be attended to or made sense of at multiple levels of organization.

Each subject was provided with a questionnaire containing 30, three item sentence sets. The items were short descriptions of objects, events, persons, or situations. For each set, all three items were descriptions on the same level of organization. The task involved asking subjects to compare these three items and to find at least one way in which two of the items were similar, and different from a third. Each comparison was designed such that, in the intuitions of the experimenter, based on the theoretical system, and confirmed by pilot data, two of the descriptions could be construed as similar

at a higher level of organization, and a different two similar on a lower level. For example, consider the following set of sentences:

a. After months of anguish, Helen shot at her husband and his lover, killing her husband.

b. Sweaty with his usual anxiety, Max screwed the silencer onto his gun, aimed carefully, and killed the driver instantly.

c. Having completed his customary preparations, Jack slashed the woman's throat, his third victim.

All three sentences involve murders. The situations described in (a) and (b) are more similar on the level of action: both murders are committed with firearms, and are apparently accompanied by some emotional arousal. But on the higher level of disposition, (b) and (c) are more similar: Max and Jack have both committed murder before, and are likely to again; they are killers. Five such comparison sets were constructed for each of six pairs of adjacent levels or organization: object-movement, movement-behavior, behavior-action, action-disposition, disposition-role or relationship, role or relationship-grouping. Sets were ordered such that each possible transition from one level pairing to another occurred exactly once. The first figure lists the comparison concepts used for each level pairing.

Results

Overall, the results showed the usefulness of a system of organizational levels for exploring the ontogenesis of social knowledge. The developmental differentiation of conceptual abilities seems to enable a progressive competence and facility at conceptualizing in terms of additional, higher levels of organization.

The results provided clear evidence that a system of organizational levels could, with some precision, be used to generate sets of conceptual material, progressively more difficult with each succeeding, higher level of organization.

Seventy-nine percent of subjects' response structures were indicative of decreases in success only with upward changes in the levels of organization for which the materials were designed. "Success" means that a subject gave a response at the higher of the two levels for which a set was designed. The next figure illustrates modal response structures for each group, compared to ideal success scores. The sort of 'tower' structure found for the majority of subjects has a chance probability of only .01. Virtually all of our subjects either had this tower structure or missed by only one response. It might be argued that the prediction of such a response structure would follow from intuitions of item difficulty alone. However, the proposed theoretical system clarifies places where such intuitions are unclear, and provides an account of what might be behind such intuitions. Such an account is also supported by overwhelming differences in analyses across the designed levels, higher levels generally resulting in less success ($F(5,460)=244.39$, $p < .001$).

Theoretical expectations about the assymetry of level relations also received some empirical support. According to the theory, operation at higher levels of organization entails also operating at lower levels, but not vice versa. Subjects were significantly more successful on items preceded by immediately higher level material than on items preceded by immediately lower level material ($F(1,92)=20.47$, $p < .001$) (ratio= 1.26:1).

Additionally, as the next figure indicates, subjects' overall response frequencies indicated a preference for operation primarily on the level of actions and nearby levels ($F(6,552)=242.51$, $p < .001$). This finding is in accord with the utility notion of Mullener and Laird (1979). Actions and nearby levels describe the natural units of our subjective, daily lives. As such, they would be more generally useful, and subjects would likely be biased toward their use.

While the clear findings for levels of organization per se tended to

obscure other differences, there were consistent and systematic differences across subjects grouped by age and by education. These differences indicate an increasing ability to operate on higher levels of organization. + Slight decreases were found for the older subjects, but since this may have been due to cohort differences in education rather than developmental deterioration, the data was reanalyzed with subjects broken into groups by education. (Next figure 4 - oldest half of oldest group have less education; figure shows new breakdowns, new average ages)+

What can be seen from these analyses is an increasing differentiation of the ability to operate at higher levels of organization (Interactions were significant for both Age X Level $F(24,552)=4.05$, p .001 and for Education X Level $F(24,552)=3.53$, p .01). The strongest evidence was for increased facility at operating across higher levels of organization. (Next figure 5: youngest group less successful overall; most educated group differentiates from others beginning at disposition-action level, group 2 drops at next level pairing, fair degree of differentiation at highest level-pair / Show next figure 6 here -- graphs age: same story as other figure, but 4 & 5 switch.) Note that at various levels some of the groups do not seem to be differentiated. Nevertheless, where they are differentiated, they are in the expected order. There are also differences in the optimum response data, but the major differences seem to concern the shift from the youngest to the older groups, with only a hint of differentiation at the highest level-pairing (Figure 7).

Implications and Conclusions

Overall, the research provided some evidence for a developmental progression of conceptual ability which largely presupposes abstract competence. As people further develop abstract ability they become better able to operate on higher levels of organization. With some qualification the present research demonstrates a progressive differentiation of subject groups, ordered by age and by education, in their competence and facility with higher levels of organization.

The major results seem to reflect a progressive increase in how 'abstract' people can be. Particularly as they attain the status of adulthood and begin to find their place in society, people seem to become increasingly able to deal with larger social entities and longer term events than those of their day to day lives, with connections more distant from (and on a different level than) the vicissitudes of their daily activities. The real challenge is to integrate these numerous levels.

A number of questions remain open for further research. What is the relation between conceptions of the physical and conceptions of the social world - are there non-human entities that can be viewed on levels of organization commensurate with human sociality? How do the utilities of the different levels vary and how do they relate to each other? Does the theoretical system provide a means for studying the multi-leveled functioning so ubiquitous to human life? How can we address the process of operating on or shifting between levels, and the mechanisms behind the development of such ability?

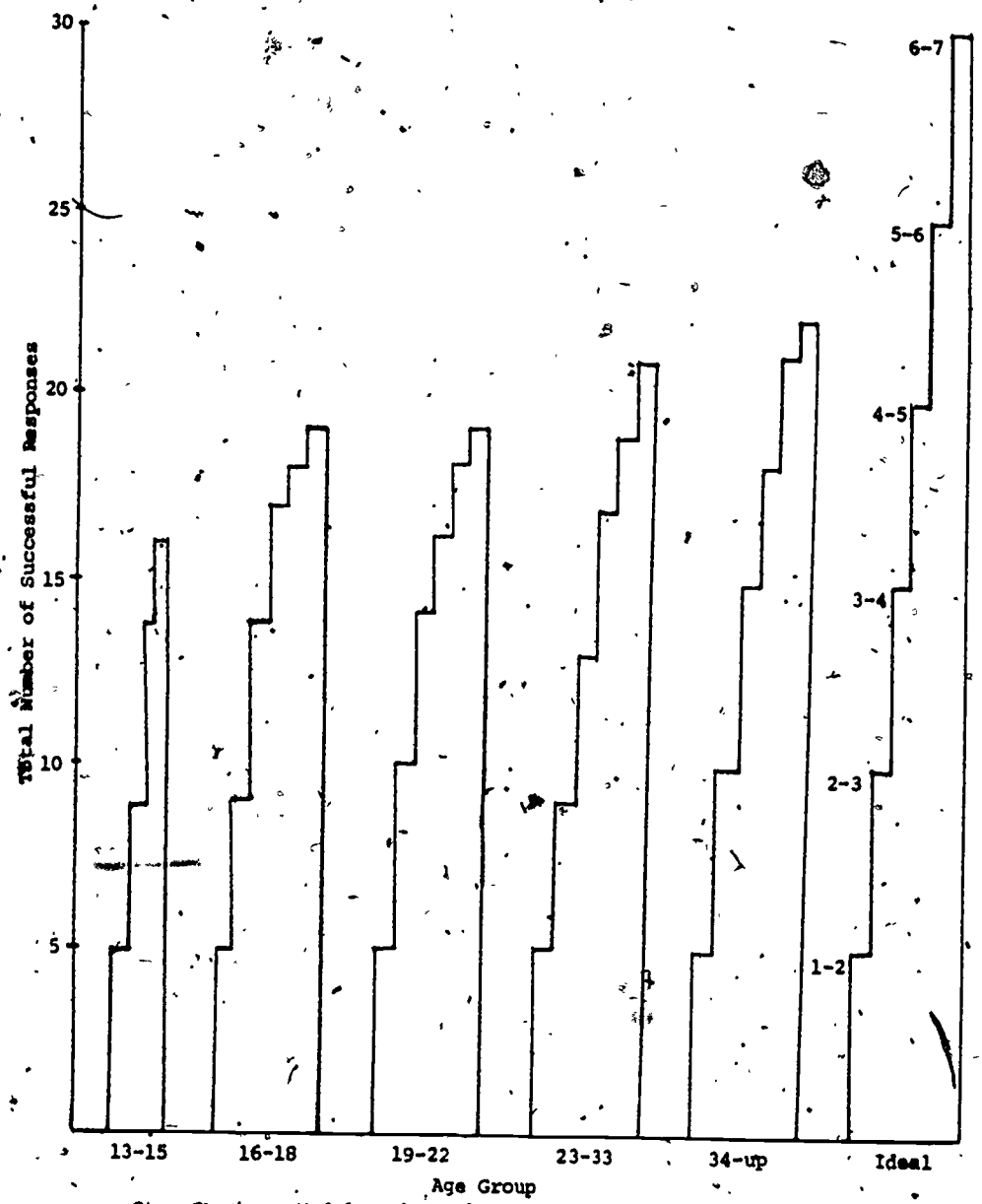
Many research avenues remain open. Nevertheless, this research has made a first step toward articulating the value of a system of levels of organization for investigating the multi-leveled character of the tie between persons and worlds. It provides an alternative to conceptual reductionism and a bridge between what seemed to be different worlds of psychological phenomena. Moreover, it provides an escape from personology, and a way to get a handle on the social constitution of individual consistency and stable human relations. Finally, a system of levels of organization may provide a step toward addressing the relationship between individuals and culture, by stressing the non-locatability of higher levels of organization, and the links between levels of organization that can occur intra, inter, and supra-individually.

Figure 1

Comparison Concepts

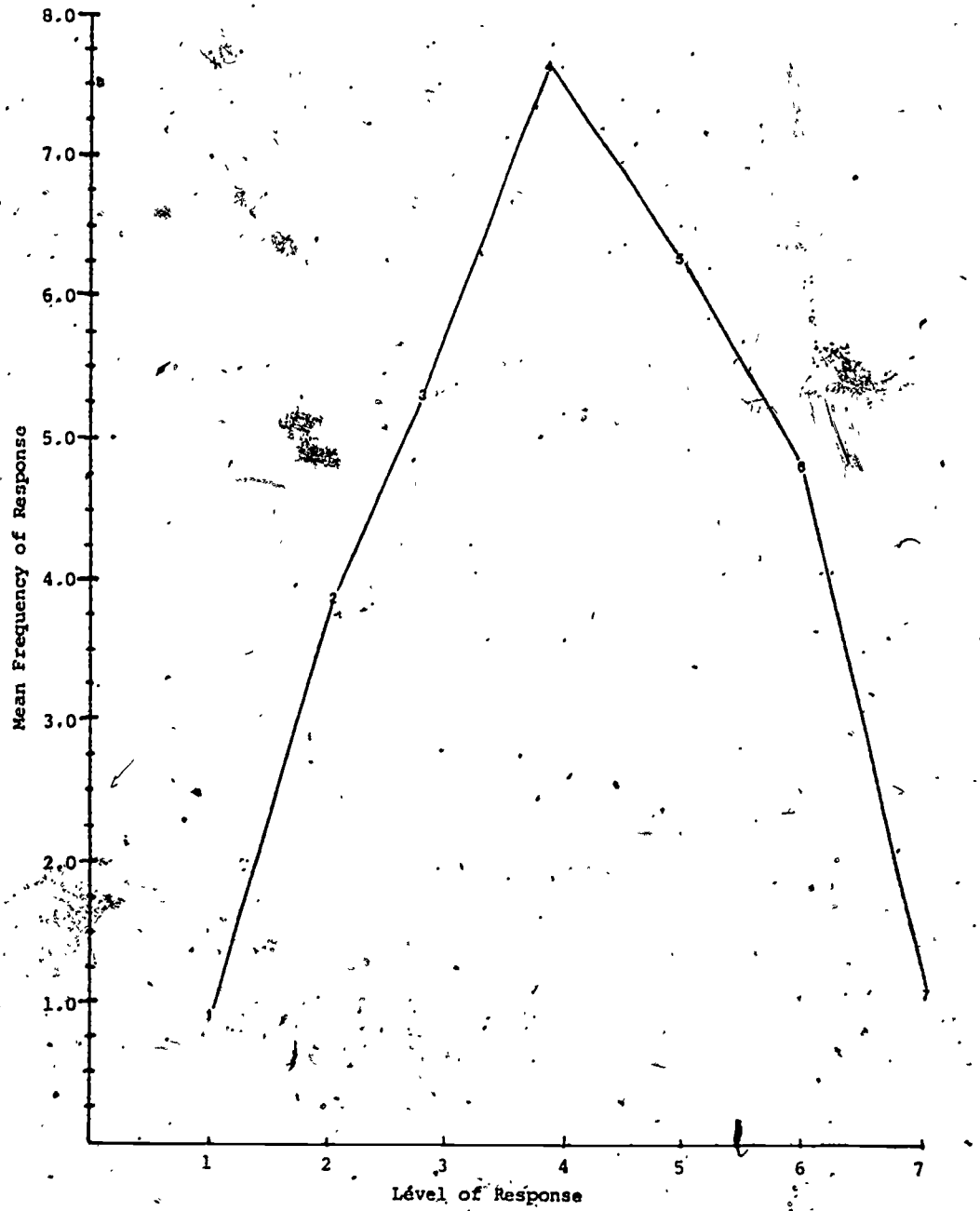
Level-Pair	Item No.	Low Level Comparison	High Level Comparison
Level 1 - Level 2		Object Similarity	Movement Similarity
	2	leg	twitch
	7	stomach	trembling
	15	fingers	tapping
	24	glass contains liquid	spill
	29	hand	opening
Level 2 - Level 3		Movement Similarity	Behavior Similarity
	8	glance left	attend
	14	armwaving	saluting
	18	kicking	moving door
	22	grinning	smiling
	27	hand rotating	unclosing
Level 3 - Level 4		Behavior Similarity	Action Similarity
	5	ride bicycle	go shopping
	10	transfer via grasp	donate
	13	speak loudly	make request
	23	detach via push	assault
	30	draw	represent
Level 4 - Level 5		Action Similarity	Disposition Similarity
	1	joke	entertainer
	9	wander on foot in city	vagabond
	17	shoot to death	killer
	20	write	writer
	25	pretend to be diplomat	pretender, deceiver
Level 5 - Level 6		Disposition Similarity	Coordination Similarity
	3	spends time in court	attorney
	6	literary	professor
	12	mutual liking	personal relationship
	19	plays raquetball, rides bike	athlete
	26	artistic interests	intellectual
Level 6 - Level 7		Coordination Similarity	Grouping Similarity
	4	classical musicians	ensemble
	11	repeated social activity	family
	16	petty criminals	gang
	21	history students	class
	28	excellent shots	team

Figure 2



Step Graphs: Modal number of successes per designed Level-pair for each of the five Age groups, compared to ideal response.

Figure 3.



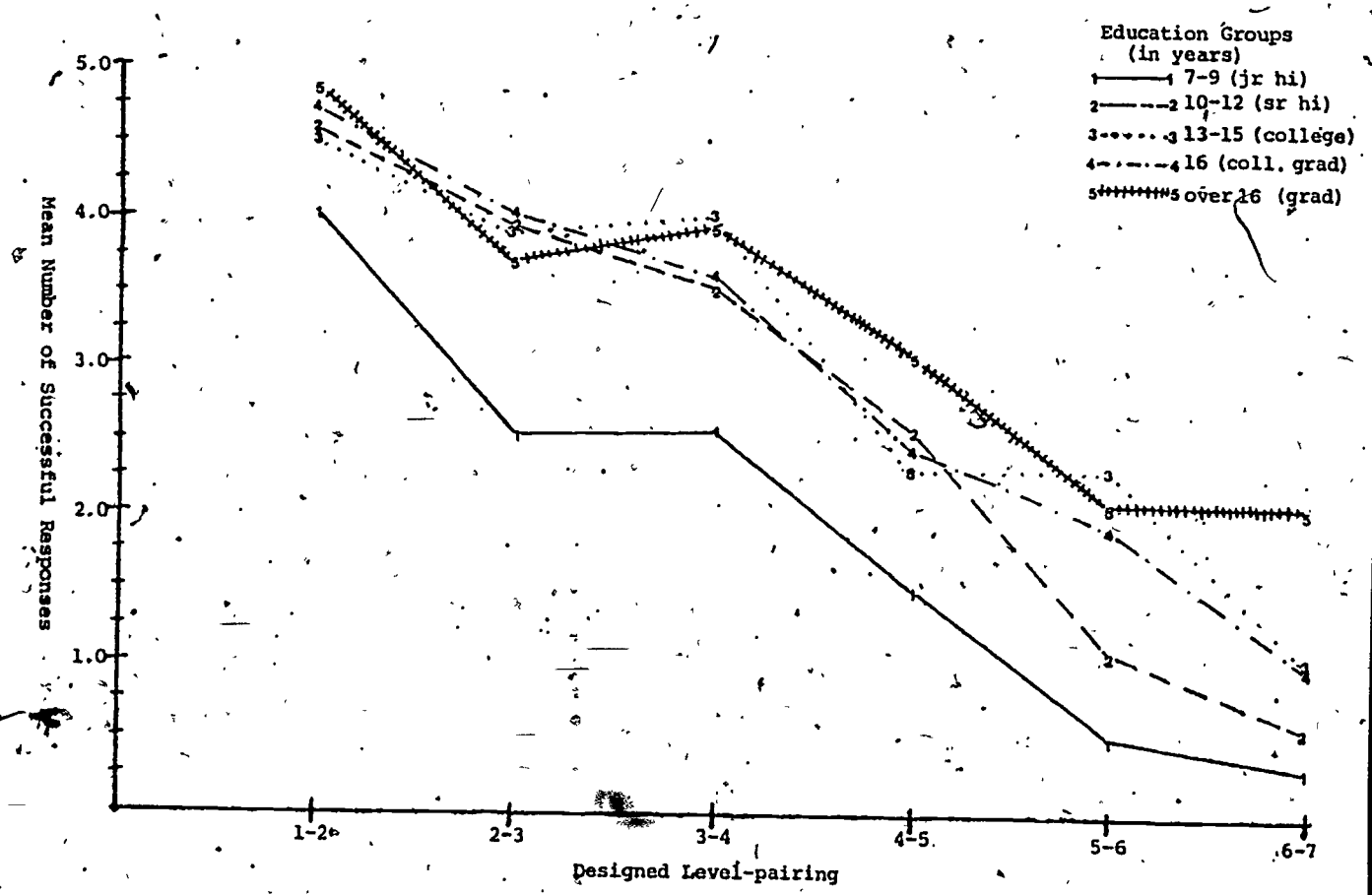
Mean frequency of response for each level of response.

Figure 4

Average Age and Years of Education for Five Age Groups and Five Education Groups (in years)

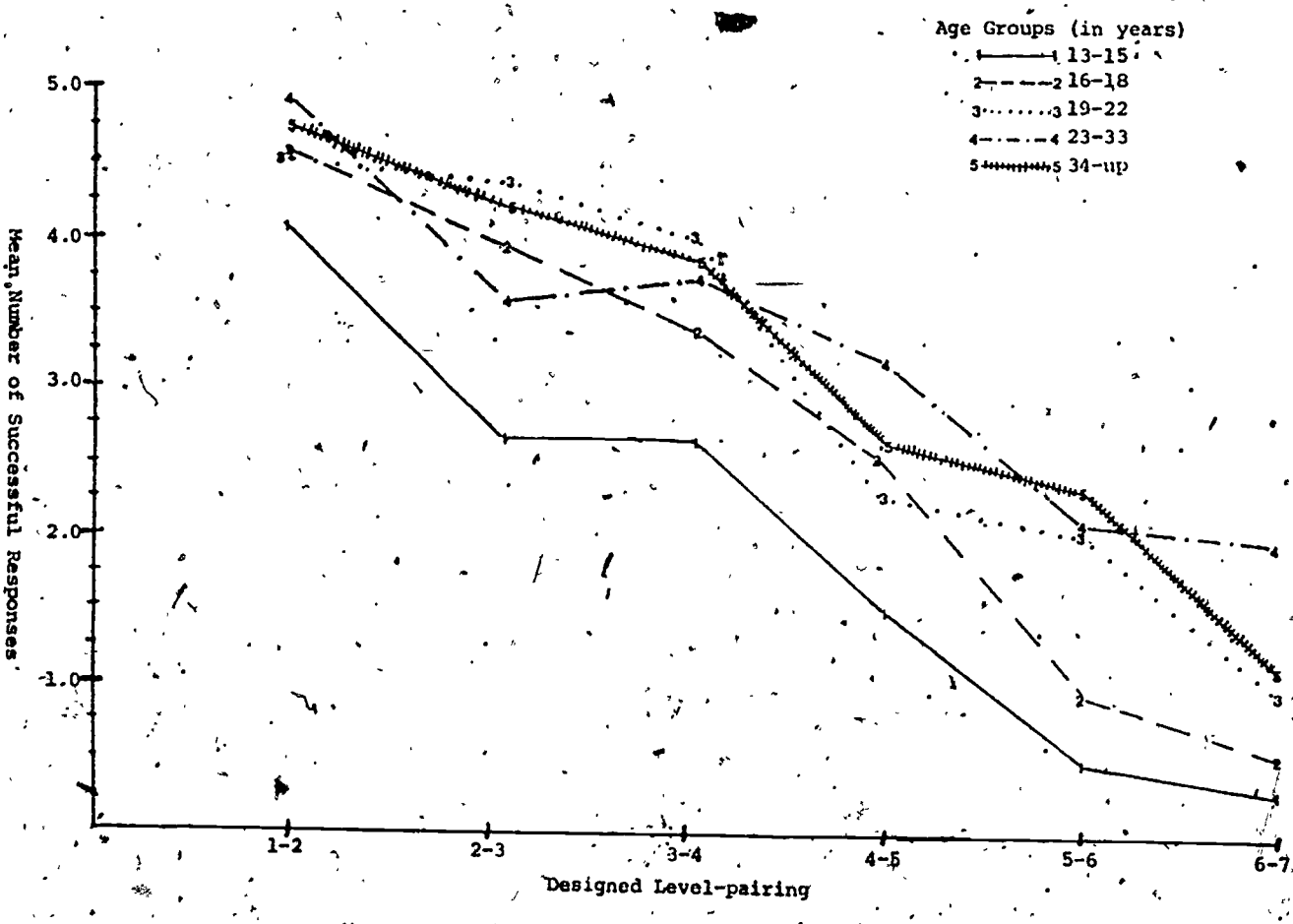
Age Groups					Education Groups				
Group	Age Range	N	Mean Age (& Std. Dev.)	Mean Educ. (& Std. Dev.)	Group	Education Range	N	Mean Age (& Std. Dev.)	Mean Educ. (& Std. Dev.)
1	13-15	16	14.44 (.86)	8.38 (.72)	1	7-9	16	14.44 (.86)	8.38 (.72)
2	16-18	21	16.98 (.83)	10.95 (.86)	2	10-12	26	17.18 (2.33)	11.15 (.88)
3	19-22	20	19.91 (1.11)	13.8 (1.36)	3	13-15 (some coll.)	21	26.68 (11.32)	14.14 (.91)
4	23-33	22	27.78 (2.95)	16.77 (2.00)	4	16 (coll. grds.)	14	37.00 (15.38)	16 (.00)
5	34-up	18	45.14 (10.06)	16.50 (1.62)	5	17-up (some coll. trng)	20	31.52 (7.02)	18.1 (1.07)

Figure 5



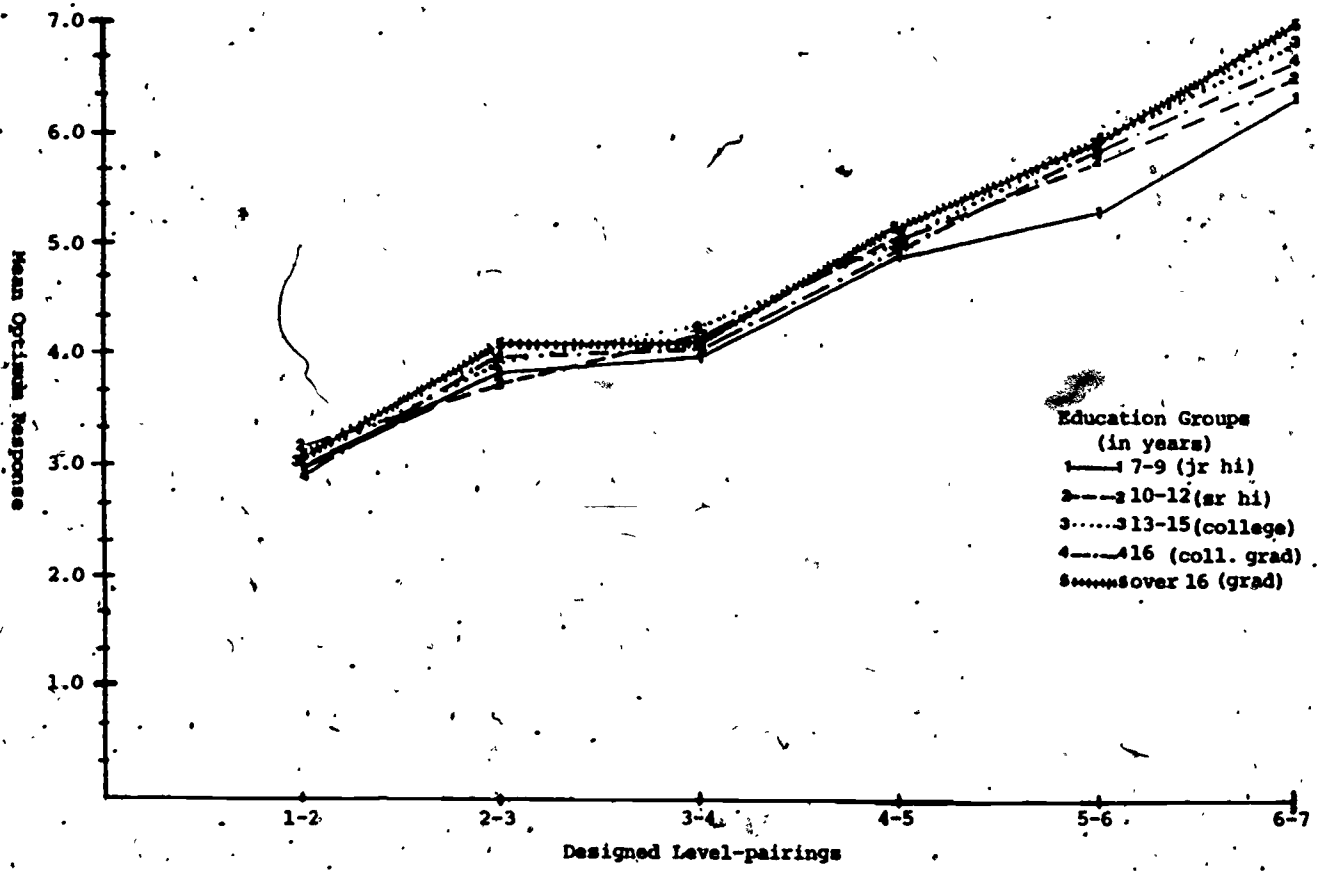
Mean successful responses for each education group at six Level-pairings.

Figure 6



Mean successful responses for each age group at six Level-pairings.

Figure 7



Mean optimum response for each of the five education groups at each of the six Level-pairings.

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