DOCUMENT RESUME

ED 211 207 PS 012 582

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TITLE Social Constraints on Social Learning in Infancy.
PUB DATE Apr 81
NOTE 16p.; Paper presented at the Annual Meeting of the Midwestern Psychological Association (53rd, Detroit, MI, April 30-May 2, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Conflict; *Infant Behavior; *Interaction Process Analysis; *Modeling (Psychology); Personality Traits; *Social Behavior; Social Development; *Socialization
IDENTIFIERS *Dyadic Interaction Analysis; Dyads

ABSTRACT

This research project, designed to examine social learning in infancy, attempted to examine the process of infant interaction through its beginning, middle, and end. Pairs of previously unacquainted 21-month-old children were observed in a laboratory playroom for 15-minute sessions on three consecutive days; on the fourth day, new dyads were created and observed for 15 minutes. The incidence of conflict, defined as an interaction marked by the incompatability of two individual actions, was recorded on videotape. The temporal sequence of conflict was defined in terms of specific dyadic interaction. Analysis was conducted regarding types of interaction within the course of a dispute, from one dispute to another, and over days. Results indicated that actions within the course of a dispute were not chosen randomly but escalated as a dispute continued, that losers of disputes were much more likely to start another conflict, and that certain individual children were disposed to begin fights regardless of whether their partner was familiar or a stranger. (Author/DB)

Social Constraints on Social Learning in Infancy

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This paper was presented as part of an invited symposium on Social and Emotional Development in Infancy and Early Childhood, at the Annual Meeting of the Midwestern Psychological Association, Detroit, April 1981.

Social Constraints on Social Learning in Infancy

The general objective of the research that I shall describe today has been to examine social learning in infancy as an explicitly social phenomenon. This work derives from the premise that infants are social organisms; from the moment of birth on, they participate in a variety of encounters with their parents and other persons. Much of what they learn about the world occurs in the theater of social interaction. Thus it seems likely that social events would influence both the process and outcome of such learning, especially when the activity to be learned itself serves as a component of interaction.

Historically, however, social learning theorists have not deemed a special set of principles necessary to account for the learning of social as opposed to nonsocial behavior. For example, in 1969, Albert Bandura remarked that: "Unless it can be shown that the vicarious learning of different classes of matching behavior is governed by separate independent variables, distinctions proposed in terms of the form of emulated responses are not only gratuitous but breed unnecessary confusion " (p. 219). Thus the theoretical analysis of social learning processes has primarily relied upon experimental analogs to socializing events, in particular, the social reinforcement and observational learning paradigms. In these paradigms, various components of the experimental setting are manipulated in an effort to control the rate of occurrence of certain response categories, including ones presumed to be social, such as hitting a doll or giving away a toy. A wealth of data has been yielded by such studies. To a certain extent, however, the generality of these findings have been challenged by two lines of recent research. Investigators (e.g., Bloom, 1979) who have attempted to

study the effects of social reinforcement during infancy - that is, during the period of life when many characteristic forms of interaction begin to appear - have reported that infants' social actions seem to be more powerfully affected by events in the immediate setting than by the consequences of prior actions. Thus the appropriateness of this paradigm as an analog to a naturally occurring socialization process may be questioned. In addition, other investigators of social development (e.g., Cairns, 1979) have suggested that the proper metric for the analysis of social phenomena is not one based on the discrete actions of individuals but rather on the interchanges of dyads. In this view, simply counting the frequency of selected response classes, without reference to the activity of a social partner might underestimate or even obscure the learning taking place in a social setting. Both lines of research suggest that an analysis of the social learning of social behavior must take into consideration the possibility that social interactions may have special properties that constrain the learning that takes place within them. An attempt to do so was made in the research I now report.

An interaction, as opposed to a single, fleeting action, is a temporally extended phenomenon; it has a beginning, a middle, and an end. Events that influence the way an interaction begins may not be the same as those that control its termination. Support for this proposition was obtained in a study of the conflicts engaged in by 21-month-old children with their peers, a study conducted in collaboration with Dr. Hildy Ross of the University of Waterloo (Hay & Ross, in press). We observed pairs of previously unacquainted children in a laboratory playroom, in the presence of both mothers and a large variety of toys. The design of this study is summarized in Table 1.

Each pair of children met in the playroom for 15 minutes on each of three consecutive days. On the fourth day half the children returned to meet their usual partners; the remaining pairs switched partners, so that each child was now introduced to an unfamiliar peer, but one who had an equivalent amount of experience in the playroom setting. The fourth session was also 15 minutes in duration. The incidence of conflict was recorded from video tapes of these sessions; conflict was defined dyadically, as in the dictionary, as an interaction marked by the incompatibility of two individual actions. A conflict began when the action of one child - whether or not it was explicitly hostile in nature - met with protest, resistance, or retaliation from the other child. A conflict was judged to have ended with the last act of protest, resistance, or retaliation followed by a 30-second period in which such acts were absent. Each conflict could be further subdivided into the moves made by each antagonist, defined as coordinated or immediately sequential actions, not interrupted by the peer's activity or by a pause of more than 3 seconds. Well over 3/4s of the conflicts were struggles for the possession of toys; moves within these object struggles could be categorized as initiations (moves that began struggles), yields (moves in which a child either gave up a disputed toy to the peer or stopped trying to wrest away the peer's toy), moves immediately prior to a yield by the peer, and continuation moves (all other moves within the struggles). Of particular concern here are initiations and yields. The influence of social events on these two types of moves was examined at three levels of analysis: within the course of a dispute, from conflict to conflict, and over days.

Within conflicts, it appeared that various actions were differentially effective in inducing one's antagonist to yield. Each move within object struggles could be also categorized as instrumental (i.e., proximal action

that could themselves accomplish or prevent the transfer of an object from one child to the other, such as tugging on the peer's toy), communicative (i.e., distal actions that would require the peer's understanding and compliance to be effective, such as gesturing to a toy and proclaiming "Mine."), or containing both instrumental and communicative components. The distribution of these three types of moves according to their position within the conflicts is presented in Table 1. Communicative moves were less frequent prior to a yield by the peer than would be expected from their overall frequency, whereas instrumental moves and, especially, moves with combined instrumental and communicative actions more often preceded yields by the peer. Thus the probability of yielding was influenced by the context of the peer's action that precedes it; moreover, the pattern suggested that action within the course of a conflict were not chosen randomly but escalated as a dispute continued.

At the next level of analysis, we examined the influence of a conflict's outcome on the probability that a child would initiate the subsequent conflict. For the purpose of this analysis, the child who had successfully gained or retained a toy at the end of a dispute was deemed the winner of that conflict. The probability that the winner would follow up victory by initiating the next dispute, $p = .37$, was reliably less than that expected by chance, whereas the complementary probability of initiating conflict, having lost the preceeding one, $p = .63$, was reliably greater than that expected by chance. This pattern of influence runs counter to the notion that the negative outcome of losing a dispute is punitive and should suppress subsequent initiations.

At the third level of analysis, examination of trends over the first three days and comparison of the two groups on the fourth day did not reveal any reliable influence of the increasing familiarity of one's partner on the initiation of conflict or yielding to the peer. However, the design also permitted consideration of the relative influence of dispositional as opposed to social factors on conflicts on the fourth day. We asked whether a child's tendency to initiate or yield on the fourth day could be reliably predicted from the corresponding tendencies on the first three days and, if so, whether predictability would be equally good for both groups. Equivalent precictability for the two groups would underscore the importance of individual dispositions; better predictability for the children who retained the same partners would indicate the influence of one's particular antagonist on conflict behavior. The results of this analysis are presented in Table 1. These findings indicated that certain individual children were disposed to initiate fights regardless of the identity of their partners; however, only when the peer remained the same did the children's tendencies to yield on the first three days predict their frequencies of yielding on the fourth day. To summarize, the initiation of conflicts appears to be determined by dispositional factors and the outcome of the preceding dispute; their termination appears to be more directly controlled by the demands of a given social situation.

Adoption of a dyadic perspective in studies of social learning also demands a more complex content analysis of each participant's behavior, as well as attention to its temporal organization. Interactions are not only extended in time, they are multidimensional in content. A variety of individual behaviors comprise an actor's role in any given interaction, any single one of which may have multiple meanings and may serve multiple ends.

Social events, therefore, may not only influence the rate of occurrence of particular actions, but may also exert an effect on the supplementary behaviors accompanying them that serve to convey their meaning. Indeed, the activities of one's companions may serve to socialize actions that are initially nonsocial, such as a young child's operations on the physical environment. Evidence for this statement was obtained in a study of the play behavior of 20- to 24-month-old children (Hay, 1981). Equal numbers of girls and boys and first- and later-born children were observed individually with their mothers. For 5 minutes, the mother sat in a chair reading magazines while the child played; for 10 minutes she joined the child in play on the floor; and for a final 5 minutes she returned to her chair to read magazines. The children's operations on toys were divided into natural units, separate tasks, which were defined as repeated operations on particular toys or combinations of toys. Each task was then examined for the presence of supplementary behaviors that would convey its meaning to a social partner, that is, evidence of the child's awareness that a particular activity was being undertaken in play as an end in itself, not as a literal means to more serious ends. The classic indicators of play, positive affect and exaggerated speech and movement, were recorded. The percentages of tasks accompained by these ludic indicators are presented in Table 2. Analyses of these data indicated that the occurrence of these supplementary behaviors were controlled by a child's general social status (as indexed by gender and birth order) as well as the immediately facilitating effects of a social partner's activity. Positive affect (defined here as audible laughing) was shown in a reliably greater proportion of tasks when the mother participated, for both genders and birth order groups. Exaggerated activity, however, was shown

reliably more often by boys than by girls across all trials, and a reliable gender by trials effect indicated that the occurrence of this ludic indicator was facilitated by the mother's participation only for girls. This difference between the genders could not be completely accounted for by differential maternal modeling in this setting. The extent to which the mothers themselves showed ludic behavior during their children's tasks in the interaction trial is also presented in the handout; no reliable effects of gender or birth order were obtained. Rather, this suggests that an experimental simulation of a social learning experience in which familiar companions participate rests upon a prior interactive history that, along with possible dispositional characteristics of the participants, may constrain the nature and extent of learning that takes place.

The preceding studies have suggested that a given social experience may have multiple effects on a young child's behavior, beyond influencing the rate of occurrence of target actions. Conversely, multiple classes of social events may produce equivalent changes in rate of a given action. Within the confines of experimental paradigms, therefore, factors other than those being deliberately manipulated may be exerting control over the outcome. Consider, for example, the observational learning paradigm. Modeling may be but one category of social experience that informs an infant that certain components of behavior may be appropriately directed to other people and incorporated into interaction. Other sets of social events may be equally informative. For example, assume that a target action, X, is frequently preceded in the course of ordinary events by a complementary action, Y. If so, the infant's production of X might be facilitated not only by a companion' modeling of X, but by that person's modeling Y; the latter event provides an

interactive slot into which the infant can slip the target action. This proposition was tested in a study of 12-month-old infants' tendency to offer objects to another person, conducted in collaboration with Patricia Murray (Hay & Murray, 1981).

We reasoned that observing a model offer objects might induce a child to share, but so might observing a model perform an action quite different in social meaning, that is, request objects from the infant. Equal numbers of girls and boys were assigned to four treatment groups, differentiated in terms of the nature of their interaction with an unfamiliar experimenter during a 3-minute exposure trial. During this trial infants sat on the mother's lap, across a table from the experimenter. Several small toys were located on the table-top. In the control condition, the experimenter merely chatted with mother and infant. In the giving condition, the experimenter modeled the target action by offering objects to the child; in the requesting condition, she repeatedly requested toys from the infant by stretching out an upturned hand and asking for an object. In a fourth condition, the give-and-take treatment, the experimenter both offered and requested objects. This manipulation involves the modeling of two different and somewhat contradictory classes of action, which may well interfere with the performance of either one; on the other hand, its nonliteral, game-like qualities might be especially effective in stimulating infants' own social behavior. Following the exposure trial, infant, mother, and experimenter returned to their former positions in the playroom for another 3-minute trial. A new set of toys was present. The experimenter now interacted with all infants as she had with the control group in the first trial. Finally, after a break, infant, mother, and experimenter returned to the playroom for a 10-minute period of free play, in which the infant was free to locomote. The toys

from the first two trials were present, plus two additional toys.

The results are presented in Table 3. In the exposure trial itself, both the give-and-take and requesting conditions facilitated infants' offers to the experimenter, in comparison to the controls; the modeling of giving by itself did not. No reliable differences among the groups in offers to the experimenter were observed in the immediate test trial at the table-top, and any such differences in the free play trial were obscured by a reliable difference between the genders; in all conditions, girls were more likely to offer objects to the experimenter than were boys. In Trial 3, however, infants who had played give-and-take with the experimenter were now more likely to offer objects to their mothers than were those in the control condition; no other comparisons were reliable. This finding suggested that it may not always be appropriate to test persisting effects of a learning experience by recording the exact recurrence of the interaction that experience originally facilitated; rather, it appeared here that the give-and-take manipulation had facilitated the occurrence of a social game, whose component actions were then applied to subsequent interaction with a more familiar partner, one with whom that game had probably been played in the past.

To summarize, these studies suggest that the investigation of social learning of social behavior in the course of ongoing interaction requires a multidimensional analysis of the stimulus events that are presented, the responses that are produced, and the learning mechanisms that are thought to be involved. A given social experience may have a variety of immediate and longer term effects, both quantitative and qualitative in nature; more than one class of experiences may be capable of producing the same effect. Certain dimensions of social behaivor may be more under the sway of the

immediate interactive situation whereas others may be more likely to be controlled by an individual's prior interactive history and social status. Processes such as observational learning and reinforcement become intertwined in interactive settings, as when the modeling of a selfish request may serve as both a prompt for and a contingent response to a generous action. It appears therefore that a very traditional view of social actions as response classes much like any others is impoverished and may lead to misleading conclusions. Developmental psycholinguists have recently suggested that monologues are special cases of the more usual form, the dialogue, and they have begun to examine language acquisition as a socially meaningful task likely to be affected by the social context in which it occurs. Similarly, those who study the learning capacities of infants may do well to recall that many if not all the actions we acquire in the course of life are learned in the company of others; as development proceeds, these actions take on social meaning and frequently are displayed as components of interaction. It thus behooves us to study the processes underlying their development as explicitly social phenomena.

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Table 1

Analysis of Peer Conflicts

Design

Group	Day 1	Day 2	Day 3	Day 4
Same Partner	A & B C & D	A & B C & D	A & B C & D	A & B C & D
Switch Partner	E & F G & H	E & F G & H	E & F G & H	E & H G & F

The distribution of types of moves according to position

	Communicative	Instrumental	Both
Initiation	95	57	30
Continuation	122	169	47
Move prior to yield	28	146	67

$$X^2_{(2)} = 89,37,\ p < .001$$

Prediction of Initiations and Yields on Day 4 from Initiations and Yields on Days 1-3

	Initiations	Yields
Same Partner	.662[a]	.535[a]
Switch Partner	.570[a]	.049[b]

[a] $p < .001$

[b] Prediction of yields was reliably greater for the same partner group, $z = 1.92$, p .05

Table 2

Percentage of Tasks Accompanied by Positive Affect

			Trial 1 Mother passive	Trial 2 Mother active	Trial 3 Mother passive
Firstborns	Boys	Mean	8%	13%	6%
		Range	0 to 30	0 to 58	0 to 25
	Girls	Mean	0%	4%	4%
		Range	---	0 to 14	0 to 25
Laterborns	Boys	Mean	2%	8%	11%
		Range	0 to 14	0 to 20	0 to 33
	Girls	Mean	3%	8%	0%
		Range	0 to 17	0 to 15	---

Percentage of Tasks Accompanied by Exaggerated Activity

			Trial 1 Mother passive	Trial 2 Mother active	Trial 3 Mother passive
Firstborns	Boys	Mean	40%	36%	30%
		Range	0 to 100	0 to 91	0 to 67
	Girls	Mean	2%	16%	5%
		Range	0 to 9	0 to 31	0 to 28
Laterborns	Boys	Mean	31%	29%	36%
		Range	0 to 60	0 to 86	11 to 90
	Girls	Mean	7%	16%	7%
		Range	0 to 33	0 to 38	0 to 17

Percentage of Tasks in Trial 2 in which Mother Shows Ludic Actions

		Positive Affect		Exaggerated Activity	
		Boys	Girls	Boys	Girls
Firstborns	Mean	14%	8%	51%	47%
	Range	0 to 67	0 to 28	14 to 100	12 to 86
Laterborns	Mean	5%	14%	47%	27%
	Range	0 to 17	0 to 36	16 to 86	0 to 50

Table 3

Effect of Interactive Experience of Offers to Adults

Offers to the Experimenter

		Controls		Giving		Requesting		Give-and-Take	
		Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Trial 1	Mean	1.0	0.0	2.0	1.2	3.8	4.0	5.8	4.2
	Range	0-3	---	0-7	0-4	1-6	0-11	0-10	2-7
Trial 2	Mean	0.5	0.0	4.0	1.8	4.8	0.8	3.8	1.0
	Range	0-2	---	0-12	0-7	0-9	0-3	0-12	0-2
Trial 3[a]	Mean	1.0	0.2	6.2	2.2	6.0	2.0	4.5	0.2
	Range	0-3	0-1	2-11	0-9	1-12	0-7	0-18	0-1

Offers to the Mother

		Control		Giving		Requesting		Give-and-Take	
		Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Trial 1	Mean	0.0	0.0	0.2	0.2	0.0	0.5	0.0	0.0
	Range	---	---	0-1	---	0-2	0-4	---	---
Trial 2	Mean	0.0	0.0	0.0	0.2	0.5	0.0	0.2	0.2
	Range	---	---	---	0-1	0-1	---	0-1	0-1
Trial 3[a]	Mean	0.5	1.8	5.8	1.0	1.8	1.8	11.0	2.2
	Range	0-2	0-5	1-16	0-2	0-5	0-5	2-21	1-3

[a]Note that Trial 3 is 10 minutes in duration.