DOCUMENT RESUME

ED 357 879 PS 021 424

AUTHOR	Popper, Sally D.; And Others
TITLE	Social and Object Mastery Play in 12-Month Olds with Depressed and Non-Depressed Mothers: Developmental Changes and Correlates.
SPONS AGENCY	National Inst. of Mental Health (DHHS), Bethesda, Md.
PUB DATE	Mar 93
CONTRACT	NIMH-MH40867
NOTE	19p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (60th, New Orleans, LA, March 25-28, 1993).
PUB TYPE	Speeches/Conference Papers (150) -- Reports - Research/Technical (143)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Attachment Behavior; Child Development; Comparative Analysis; Depression (Psychology); *Infant Behavior; *Infants; Mother Attitudes; Mothers; *Parent Child Relationship; Security (Psychology); *Sex Differences; *Social Behavior
IDENTIFIERS	*Mastery Motivation

ABSTRACT

As part of a longitudinal study of postpartum adjustment and infant development, this study examined whether securely attached 12-month-old infants show greater object mastery motivation and social-object mastery motivation than do insecurely attached infants. Object mastery relates to infants' goal-directed behavior that is oriented toward objects; social-object mastery relates to infants' efforts to involve other people in attempts to meet their goals in object play. The study also investigated whether certain environmental influences, such as maternal depression and maternal work outside the home, affect mastery motivation or attachment. Subjects were 95 middle class mothers with healthy first-born infants. Forty-seven mothers met criteria for major or minor depression. Within a month of the infant's 12-month birthday, subjects participated in the Strange Situation procedure and a mastery motivation experiment. All interactions were videotaped and coded for attachment and mastery behavior. Analysis revealed that social-object mastery was related to attachment security and infant gender. Securely attached girls exhibited higher social-object mastery scores than insecurely attached girls and securely and insecurely attached boys. No relationships between object mastery and maternal depression, maternal work outside the home, or infant gender were found. (Contains 27 references.) (MM)

SOCIAL AND OBJECT MASTERY PLAY IN 12-MONTH OLDS WITH DEPRESSED AND NON-DEPRESSED MOTHERS: DEVELOPMENTAL CHANGES AND CORRELATES

Sally D. Popper, Shelley Ross*, Jeffrey F. Cohn, Susan B. Campbell
Clinical Psychology Program, University of Pittsburgh, 4015 O'Hara Street, Pittburgh, PA 15260
*Center for Pediatric Psychiatry and Medicine, Western Psychiatric Institute and Clinic, 3811 O'Hara Street, Pittsburgh, PA 15213

Paper presented at the biennial conference of the Society for Research in Child Development, New Orleans, March, 1993.

This research was supported in part by NIMH Grant #MH40867 to Susan B. Campbell and Jeffrey F. Cohn

Introduction

An infant's motivation to explore the objects in her physical environment in a purposeful way has been conceptualized as an innate and universal trait (Hunt, 1965; White, 1959; Yarrow & Pedersen, 1976). On the other hand, both social psychologists and attachment theorists have suggested that such motivation can be modified by social feedback in general (e.g. Harter, 1981), or by the attachment relationship itself (Ainsworth, Blehar, Waters, & Wall, 1978; Maslin-Cole, & Spieker, 1990). This study explores the possibility that mastery motivation in 12-month olds is related to the quality of infant-mother attachment assessed concurrently. Such a conclusion is suggested by two published studies which have looked specifically at mastery motivation concurrently with attachment classification at 12 months (Belsky, Garduque, & Hrncir, 1984; Frodi, Bridges, & Grolnick, 1985). In each of these studies, securely attached infants exhibited developmentally higher levels of play than did at least one category of insecurely attached infants. We also examine whether differences in the social environment caused by maternal depression, or by varying maternal work schedules may affect the early development of such motivation. Recent research by Redding, Harmon, and Morgan (1990) has supported the thesis that maternal depression negatively affects infant mastery motivation. In addition, we examine infant gender as a potential influence.

Mastery motivation is most commonly defined as persistence in goal-directed behavior during play with objects. In recent work, Wachs (1987) has suggested that in addition to this object-oriented motivation, social-object mastery motivation can be seen in the infant's attempts to involve other people in her exploration and problem solving with objects.

In this study we examined mastery motivation from both of these perspectives, and called our two measures of mastery motivation object mastery for the infant's goal-directed behavior specifically oriented toward objects, and social-object mastery for the infant's efforts to involve other people in her attempts to meet her goals in object play.

Hypotheses to be tested.

This study tests the hypothesis from attachment theory that securely attached 12-month olds show higher levels of mastery motivation (both object mastery and social-object mastery) than insecurely attached infants. No previous studies have examined these two different types of mastery motivation in relation to attachment.

In addition to testing this primary hypothesis derived from attachment theory, we examine the effects of certain specific environmental influences which may directly affect mastery motivation or attachment, or may mediate the effects of attachment on the expressed level of mastery motivation. These include maternal depression, maternal work outside the home, and infant gender.

Method

Subjects

Ninety-five infants and mothers took part in a 12-month assessment of mastery motivation and attachment security. All subjects were part of a longitudinal study of postpartum adjustment and infant development. Subjects were middle-class mothers with healthy first-borns infants, and all had uncomplicated pregnancies and deliveries. Forty-seven of the mothers met Research Diagnostic Criteria (RDC, Spitzer et al., 1978) criteria for major or minor depression at the time of recruitment at 2 months postpartum, as assessed by structured interview (a modified version of the Schedule for Affective Disorders and Schizophrenia; SADS, Endicott & Spitzer, 1978); the remainder showed no significant depressive symptoms in those same 2 months. The 12-month assessment was one in a series of assessments that began when the infant was 2 months old and continued at eight different visits, including interviews, laboratory and/or home visits.

Procedure

Mothers and infants were asked to come to our laboratory within a month of the infant's 12-month birthday. The standard procedure for the Strange Situation was followed. After the Strange Situation, the infant was offered juice and cookies and a time to relax. When the experimenter and mother agreed that the infant was no longer stressed from the Strange Situation, the

mastery motivation procedure began. During this procedure, the mother was present but did not participate. The infant was presented a warm-up toy for one minute, and 5 other toys for three minutes each. (All toys described in Appendix 1.) The experimenter demonstrated various aspects of the toys twice, then encouraged the child to do the same things herself. Every thirty seconds the child was encouraged to do the demonstrated actions, but otherwise the experimenter did not interact with the child, except to reset the toy so that it was ready for the child to do the demonstrated actions. If the child was off-task for a 30-second continuous period during the three minute task, that task was ended early, and a sixth toy was shown after the first five.

Coding

Attachment. Dyads were coded avoidant, secure, and resistant (A, B, and C, respectively; Ainsworth et al., 1978). All attachment tapes are also being reviewed for possible disorganized or D insecure attachment, but since that review is not yet complete, it is not reported here.

Mastery motivation. Mastery behavior was coded on two separate passes through the videotapes, once for object mastery behaviors, and once for social-object mastery behaviors, using

On the first pass, object mastery behavior alone was coded using procedures based on those by Morgan et al. (1976), and by Vietze, et al. (undated). Coded behaviors that were considered to represent object mastery behavior included attempts, both successful and unsuccessful, to perform actions demonstrated by

the experimenter, and attempts to perform actions suggested by the particular nature of the materials but not demonstrated by the experimenter (such as picking up the Fisher Price Barn by the handle and carrying it as a suitcase). A distinction was made between such competent, goal-oriented exploration of the object, which was considered to reflect mastery motivation, and more passive or immature exploration, such as simple banging or mouthing.

On the second coding pass, social-object mastery behavior were coded using a system based on those by Wachs (personal communication, May 19, 1988) and MacTurk, Hunter, McCarthy, Vietze, and McQuiston (1985). Behavior that was considered to represent social-object mastery included glances or vocalizations to an adult while the child was actively involved in exploring the toy, eliciting help or approval from an adult, or taking a toy to an adult.

Mastery Scores

Mastery scores were averaged across toys, so that the major measures used in the analyses were the mean number of seconds each child engaged in social-object and in object mastery behavior over the five toys that were scored.

Preliminary Analyses

-Attachment.

54 (or 57%) securely attached (B)

34 (or 36%) avoidantly attached (A)

7 (or 7%) resistantly attached (C)

Because so few infants were resistantly attached, further analyses were performed using only secure and avoidantly attached infants.

-Maternal depression.

47 (49%) of mothers met RDC criteria for probable or definite major or minor depression at the two-month interview point.

-Maternal Employment Status.

55 mothers worked less than 20 hours a week outside the home during the course of their infant's first year of life. 40 mothers worked 20 hours or more per week during that same time period.

Results

We used analyses of variance to examine the relationship between our two mastery motivation measures--object mastery and social-object mastery--and 4 independent variables; security of attachment, maternal depression, maternal work outside the home, and infant gender. Object mastery scores showed a normal distribution, but social-object mastery scores were positively skewed, so those scores were log-transformed for the analyses.

Object Mastery

As can be seen from the accompanying table, none of the independent variables showed a significant relationship to object mastery. That is, none of the independent variables--attachment security, maternal depression, maternal work outside the home or infant gender showed a significant relationship by themselves or in interaction with each other, to object mastery behavior.

Table 1

Object Mastery Scores

				F	Sig.
Entire Group	59.8				
Avoidant	58.9	Secure	60.4	.130	.719
Depressed	58.2	Non-Dep.	60.4	.145	.705
Boys	61.1	Girls	57.3	.827	.366
<20 Hours Wk.	60.6	>20 Hours	58.8	.156	.694

Social-Object Mastery

Unlike object mastery, significant main effects as well as interaction effects were found between social-object mastery and two of the independent variables--attachment security and infant gender. Securely attached infants were found to have higher social-object mastery scores than avoidantly attached infants, and girls were found to have higher scores than boys. A significant interaction effect was also found for the security of attachment by infant gender interaction.

Table 2

Social-Object Mastery Scores

				F	Sig.
Entire Group	19.0				
Avoidant	15.5	Secure	21.2	4.222	.043
Depressed	19.4	Non-Dep.	17.8	1.417	.238
Boys	15.1	Girls	22.9	7.737	.007
<20 Hours Wk	18.4	>20 Hours	18.7	.595	.443
Gender by Attachment Interaction				3.743	.057

When a Tukey post-hoc test was performed on the four pairwise comparisons in the significant interaction, securely attached girls were found to be significantly different from all other groups. Looking at the bar graph you can see that whereas avoidantly attached boys and girls and securely attached boys had very similar scores (14.05(log value 2.55), 17.12 (log value 2.59), and 16.16 (log value 2.60) respectively), securely attached girls showed a much higher score (28.23 (log value 3.16).

Table 3

Social-Object Mastery Means for Attachment by Gender Interaction

Securely Attached Girls	28.23*
Insecurely Attached Girls	17.12
Securely Attached Boys	16.16
Insecurely Attached Boys	14.05

*This score significantly different from all others.

Conclusions

Hypothesized results were not found for the relationship between object mastery and attachment, nor were relationships found between object mastery and maternal depression, maternal work outside the home or infant gender. However, social-object mastery was found to relate both to security of attachment, as hypothesized, and, surprisingly, to infant gender. In fact, the attachment by gender interaction is the strongest finding in this study. The finding for security of attachment is relatively easy to explain in terms of the literature on attachment. Securely attached infants are likely to see adults as reliable and effective sources of help in solving difficult problems. But why is the effect much stronger in girls than in boys? A suggestion as to why this should be comes from studies of how girls and boys deal with uncertainty and lack of response in a novel situation. Goldberg and Lewis (1969) found that, in laboratory free play, 13-month old girls returned to mother and vocalized to mother more than boys did. When frustrated by an impassable barrier, girls appealed to mother for help, while boys independently tried to get around the barrier. Similarly, in a free play situation, Olesker (1990) found that 9- to 12-month old girls bid for mother's attention significantly more than boys. Wasserman and Lewis (1985) reported that 11- to 14-month old girls touched and maintained proximity to mother more than boys, but did not vocalize more. Girls' touching and proximity seeking was also increased by the lack of mother's emotional availability (as is

found in the mastery motivation situation in which the mother is busy filling out a questionnaire). With older children (20 to 24 months), Fagot (1978) found that girls asked for parental help 3 times as often as boys during free play at home. Black (1989) reported that 3 and 4 year old girls more than boys showed a style of play in which they exhibited turn taking and anticipated turn taking on the part of the other children playing.

There is a small literature that suggests that it is possible maternal sensitivity is expressed differently to girls and boys. Malatesta et al. (1989) looked at early maternal behavior and infant attachment status. They found that mothers were more expressive and positive with their daughters, and most so toward their securely attached daughters. Fagot (1978) found that 20- to 24-month old boys were more likely to be left alone to play than were girls. Parents also gave more praise and more criticism to girls. Perhaps it was as a result of these differential parental behaviors that girls asked for help 3 times as often as boys. In her review of the subject in the Mussen Handbook, Huston (1983) reported that mothers of preschoolers had been found to communicate more demands for independent task performance to boys, and to help girls more quickly than boys. If this were also true of infants under the age of one year, it would seem likely to result in boys seeking less social involvement in their problem solving tasks. Of course, it may also be that boys' and girls' temperamental differences cause or contribute to differences in parental behavior.

Boys and girls may also react differently to similar sensitive maternal behavior. Martin, Maccoby and Jacklin (1981) reported that mothers who had been nonintrusive in play with their infants at 9 months tended to have 18-month old boys who favored independent exploration in their play, while girls of similarly nonintrusive mothers favored proximity seeking.

These studies of gender differences in parent and child behaviors have not looked at the infants' attachment status. But since these studies have been of predominantly middle class families, it is likely that a majority of infants in these samples are securely attached. Thus, these reports of gender differences may be telling us about the differences found between securely attached boys and girls and their parents. It may be that within our society, adaptive behavior for securely attached girls includes more help seeking, turn-taking, and sharing, whereas secure boys pursue their independent exploration more confidently.

If this is true, does it mean that the smaller amount of social-object mastery behavior seen in avoidant infants of both genders may mean something different for boys and girls? Insecure boys show essentially the same relatively independent style of exploration and problem solving as secure boys, while insecure girls with the same object mastery scores as securely and insecurely attached boys deviate from the social-object mastery norm set by secure girls. Since most studies of the sequelae of attachment status have not examined gender effects,

it is impossible to know what this finding might mean for later development. It has been suggested by both Vondra (1987) and Messer et al. (1986) that a given pattern of mastery motivation seen in infancy may lead to differing cognitive performance later by boys and girls, in part because similar patterns of mastery behavior in infancy reflect different developmental trajectories for boys and girls. If the findings in this study are replicated, they would suggest that a further examination of gender differences within attachment groups in problem solving tasks as well as other developmentally appropriate tasks would be in order. Future research should make use of larger sample sizes to enable this breakdown of information. Given these findings, it is also important to look at whether the developmental consequences of attachment may differ for girls and boys.

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Appendix 1

Toys Used in Mastery Motivation Procedure

Discovery Cottage	Plastic cottage with a hinged front door and roof. Plastic dolls fit into holes under the roof and behind the door. A chimney on the side of the house opens at the bottom and the dolls can slide down the chimney
Surprise Box	White plastic box with five pop-up doors that are opened by operating the appropriate manipulanda. Operation requires simple sensory-motor skills such as pushing, pulling, and dialing.
Up N Down Truck	Plastic truck with several small dolls that fit onto raised pegs. Dolls can be moved to different parts of the truck, and into the basket of a crane which can be moved up and down. Pushing the truck along the floor makes a clacking sound.
Shape Sorter	Plastic shape sorter with 3 holes--triangular, square and hexagonal. Dolls with bases that fit into the holes create a noise as they slide into the shape sorter.
Barn	Barn with sliding doors opening into the roof and latching doors below. Small dolls are hidden behind each door.
Clock Top	A top with a clock and gears inside that rotate when the top is spun.