

## The Relation of Mothers' Controlling Vocalizations to Children's Intrinsic Motivation

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Twenty-six mother-child dyads played together in a laboratory setting. Play sessions were surreptitiously videotaped (with mothers' permission), and each maternal vocalization was transcribed and coded, first into 1 of 24 categories and then ipso facto into one of three supercategories—namely, controlling, autonomy supportive, and neutral. The degree of mothers' controllingness was calculated as the percentage of vocalizations coded as controlling. This index was correlated with the intrinsic motivation of their 6- or 7-year-old children, as assessed primarily by the free-choice behavioral measure and secondarily by a child self-report measure of interest and liking for the task. Both correlations were significantly negative, thereby suggesting that the robust laboratory findings of a negative relation between controlling contexts and individuals' intrinsic motivation are directly generalizable to the domain of parenting. Results are discussed in terms of the processes that undermine intrinsic motivation and the means through which parental controllingness is communicated. © 1993 Academic Press, Inc.

For the past two decades, researchers have explored contextual influences on intrinsic motivation and its correlates such as creativity (Amabile, 1983), conceptual understanding (Benware & Deci, 1984), and self-esteem (Deci, Nezlek, & Sheinman, 1981). Conducted in laboratory settings, these studies have detailed the effects on intrinsic motivation and related processes of specific contextual events like task-contingent rewards (Deci, 1971), positive feedback (Deci, Cascio, & Krusell, 1975), and deadlines (Amabile, DeJong, & Lepper, 1976) and also of the interpersonal climate created by the experimenter's style and locution (Koestner, Ryan, Bernieri, & Holt, 1984).

In the classic paradigm (Deci, 1972), subjects work on a target task in experimentally manipulated contexts, and subsequently their intrinsic mo-

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tivation is assessed with the so-called "free-choice" measure. This behavioral measure involves surreptitiously observing the subjects' engagement with the interesting target task during a period when there are no experimental demands or extrinsic reasons for engaging in the activity and there are alternative interesting tasks available. The amount of time they spend with the target task is said to index their intrinsic motivation for that activity.

The most general and robust finding from dozens of studies in this tradition is that contextual factors that function to control people—in other words, that pressure them to behave, think, or feel a particular way—undermine their intrinsic motivation (Deci, 1971; Lepper & Greene, 1975; Ryan, Mims, & Koestner, 1983). Further, these studies have led to a refined account of how the functional significance of social contextual events can be either *controlling* or *autonomy supportive* and will, respectively, either undermine or maintain intrinsic motivation (see Deci & Ryan, 1987, for a review).

More recent studies have explored the relation between social contexts and intrinsic motivation in field settings involving status or power differentials. Using varied questionnaire and interview formats, the orientations of parents and teachers (and thus the social contexts created by them) have been related to the intrinsic motivation of their children and students (e.g., deCharms, 1976; Deci et al., 1981; Grolnick & Ryan, 1989). These varied studies have assessed whether the orientations of the parents or teachers tend to support children's autonomy (i.e., provide choice and encourage initiation) or control children's behavior (i.e., pressure them to behave certain ways), and the results of these studies have reaffirmed that controlling contexts undermine children's intrinsic motivation.

Despite the parallel findings from the laboratory experiments (involving short-term interactions between strangers) and the field studies (involving long-term interactions between people well-known to each other), the relevance and generalizability of each set to the other have not been clearly demonstrated. The first purpose of the present study was to establish this mutual relevance and generalizability by using a modification of the "free-choice" laboratory paradigm with mothers and their 6- and 7-year-old children. This would facilitate greater integration of the results of the laboratory experiments showing the undermining of intrinsic motivation by controlling contexts with the research showing the negative effects on children of controlling (Grolnick & Ryan, 1989), authoritarian (Baumrind, 1971), or power-assertive (Hoffman, 1960) parenting.

To date, only one team of investigators has considered the relation between the controllingness of observed maternal behavior and the intrinsic motivation of their children (Frodi, Bridges, & Grolnick, 1985; Grolnick, Frodi, & Bridges, 1984), and their studies employed 12- and 20-month old children. Those investigators developed a new method for

rating the degree of controllingness of maternal behavior, and they employed a system suggested by Morgan, Harmon, Gaiter, Jennings, Gist, & Yarrow (1977) for rating the components of infant mastery motivation (viz, persistence, competence, and positive affect). Frodi et al. (1985) reported a negative relation between mothers' controllingness and infants' mastery motivation, especially their persistence and competence.

In many of the above-mentioned field studies (e.g., Frodi et al., 1985; Grolnick et al., 1984; Grolnick & Ryan, 1989), the degree of controllingness of mothers and fathers has been assessed with a global rating procedure. That method entails observers' making subjective judgments based on observations of parents' behaviors or parents' responses to interview questions. The method has worked quite satisfactorily, yet an additional contribution could be made by specifying the types of vocalizations or behaviors that are likely to be experienced as controlling by children (and observer-raters).

Thus, the second purpose of the present study was to begin detailing the types of vocalizations that are likely to be experienced as controlling and to undermine intrinsic motivation. Accordingly, we have employed a more "objective" coding procedure to classify each maternal vocalization during the observed mother-child play periods. A summary index of maternal controllingness was then formed to be correlated with children's intrinsic motivation.

In developing the coding categories, we were guided by previous experimental results (e.g., Koestner et al., 1984) and by the definition of "controlling," namely any vocalization that functions "to pressure a person to behave (or think or feel) a particular way." Directives or commands were considered controlling, as were questions that implied a particular answer, statements that referred to what the child *should* do, and interventions by the mother that interfered with the child's initiation and exploration. For example, if a mother were to respond to her child's question with "You know what you should do," it would be considered controlling, whereas if she responded with "What would you like to do?" it would not. The former is controlling because it has the implicit pressure to behave as the mother thinks the child should, and the latter is autonomy supportive because it encourages the child to choose what to do based on his or her own interests. Any vocalization that encouraged the child's initiations or was relevant to the task and did not interfere with the child's autonomy was considered "autonomy supportive or noncontrolling," and irrelevant comments were considered "neutral or unclassifiable."

To summarize, the present study was designed to complement previous studies relevant to parental control and children's intrinsic motivation by: (1) involving children who were older than the infants in the Frodi et al. (1985) study and thus more comparable to the subjects in most laboratory and field studies of intrinsic motivation; (2) using the free-choice measure

of intrinsic motivation with children who had just interacted with their own mothers; and (3) using an "objective" coding procedure that involved categorizing actual vocalizations made by mothers rather than using the more commonly employed global rating procedures. We expected that mothers whose vocalizations were coded as more controlling would tend to undermine their children's natural interest and persistence, so we hypothesized a negative correlation between the degree of controllingness observed in the mothers' vocalizations and the indices of their children's intrinsic motivation.

## METHOD

### *Subjects*

Twenty-six 6- and 7-year-old children (14 boys and 12 girls) and their mothers participated in this laboratory procedure in a room at a local elementary school during nonschool hours. Subjects were recruited by letters sent to the mothers in a middle- to upper-middle-class suburb of Rochester, New York.

### *Procedure*

Each mother and child pair was greeted by two experimenters, one male and one female, who alternated duties to eliminate systematic sex-of-experimenter effects. The participants were shown to the experimental room where they would be spending most of their time playing, and the Legos and Lincoln Logs, which would serve as the target activities, were pointed out. A children's magazine and jigsaw puzzle, which would be available as alternatives to the target activities during the free-choice periods, were also noted. The child was then taken by one of the experimenters to another room and was told that his or her mother would stay behind for just a little while. The child was given a short questionnaire which asked how much he or she liked each of several toys including Legos and Lincoln Logs. The second experimenter remained in the experimental room and described the entire procedure to the mother. She was asked for permission to have the play sessions videotaped, and she was assured that the information would be kept confidential. The experimenter asked the mother not to mention the videotaping to her child and then went behind a partition from where he/she would operate the video camera. Subsequently, the first experimenter returned with the child to the playroom and then left the room so the mother and child could begin the laboratory procedure.

The procedure involved four periods: The mother and child played together for 8 min, the child was left alone in the room for 5 min, the mother returned and they worked together on another task for 8 more min, and finally the mother left the child alone for another 5 min. During

one of the interactive sessions and the subsequent 5-min "free-choice period" the target task was Legos, while during the other it was Lincoln Logs. The order of tasks was counterbalanced across subjects. During the first of the two interactive sessions, all mother-child pairs played freely with the task, "as if you were at home with some time to play together," and during the second they were given a more directive instruction of constructing a particular object that was shown in a picture provided for them (a locomotive if the task was Legos and a cabin if the task was Lincoln Logs). Because it was not clear whether there would be greater variability in maternal controllingness in a free-play situation or a situation with an agenda (i.e., construct an object), we used both instructions to ensure variability in the degree of controllingness displayed by these mothers.

Subsequent to the four experimental periods, the child completed a second short questionnaire which again asked how much he or she liked each task.

### *Measures*

*Coding of mothers' vocalizations.* Prior to this data collection, the first author spent several hours observing videotapes of mother-child play interactions to develop a set of vocalization categories that seemed to be exhaustive of the types of things mothers said. Twenty-four categories were identified. The list of these 24 category descriptors was studied by two people who are very familiar with the motivation theory that guided this project (Deci & Ryan, 1985), and those experts independently indicated whether each statement type: (1) was controlling, (2) supported autonomy or provided noncontrolling structure, or (3) was neutral or unclassifiable.

In classifying the vocalization types into supercategories, the two judges were attempting to infer the psychological meaning (or *functional significance*) that that type of vocalization would be likely to have for a receiver. In so doing, they used the definition of controlling as "a vocalization that would pressure the person to do a particular behavior" and of autonomy support as "a vocalization that would allow choice or support self-initiation." Past research (Ryan, 1982) has indicated, for example, that a praise statement can be either pressuring and controlling *or* affirming and supportive, depending in part on whether the apparent intention of the communicator was to obtain compliance (Category 10; e.g., "Good, that's just what you should do") or to acknowledge autonomous achievement (Category 15; e.g., "That's nice, you've done really well"). Similarly, a question can be a genuine request for information (Categories 20 and 21; e.g., "How many blue blocks are there?"), or it can be controlling (Categories 3 and 11; e.g., "Don't you think you should use shorter logs for that?").

TABLE 1  
LIST OF 24 CATEGORIES WITHIN THREE "SUPER-CATEGORIES"

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Controlling statements	
1.	Solutions, suggestions, or hints that preempt the child's autonomy
2.	Controlling responses to the child's questions
3.	Interruptive questions that direct the child's attention
4.	Controlling statements disguised as questions
5.	Statements containing or implying conditional positive/negative worth (e.g., "You are a good/bad boy for . . .")
6.	Statements about deadlines
7.	Statements containing the words "should," "have to," etc.
8.	Directive statements containing the words "put," "take," etc.
9.	Directives bidding for child's attention
10.	Comments praising compliance
11.	Controlling questions (e.g., questions that imply what the child should do)
12.	Controlling criticisms
13.	Other controlling statements not elsewhere classifiable
Autonomy support or noncontrolling structure	
14.	Informational responses to child's questions
15.	Comments acknowledging the child's autonomous performance or behavior (informational feedback)
16.	Information useful for redirecting behavior (constructive suggestions)
17.	Personal comments or self-disclosures (information about mother's thoughts or feelings)
18.	Solutions, suggestions, or hints offered as information when the child seems to be blocked or stuck
19.	Noncontrolling statements not elsewhere classifiable
20.	Noncontrolling questions
21.	Clarification questions about child's wants or needs
Neutral statements or unclassifiable statements	
22.	Simple acknowledgment of child's statement
23.	Filler comments or chatter
24.	Nonclassifiable statements

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There was 96% agreement between the independent judgments of the two experts, who then discussed the one discrepancy and arrived at consensus. The list of 24 categories, presented in the three "super-categories," appears in Table 1.

After the experimental procedure had been conducted, every maternal vocalization was transcribed from the videotapes by experimental assistants. A vocalization could, for example, be a single expression like "Uh-huh" or a full question like "What color would you like to use first?" The total number of vocalizations per mother during the 16 min across the two play periods ranged from 160 to 659. Two research-assistant coders (from a pool of eight who worked on the coding) coded each vocalization into one of the 24 categories, thus, ipso facto, placing it into one of the three super-categories. Coders watched and listened to the tapes as they

proceeded through the transcriptions of vocalizations, coding each one by a vocalization-identification number. The statistic of interest was the percentage of vocalizations made by the mother that was considered controlling using this coding method. To determine this we averaged the percentage of vocalizations placed in the controlling super-category by each of the two people who coded that mother's vocalizations.

Percentage agreement between the two coders on which of the three super-categories the vocalization fell into was 68%. This was somewhat lower than we had expected so we looked carefully at the coder pairs. For most pairs of coders the percentage agreement was much higher (above .8), but there were two pairs of coders who accounted for the low average. In each of those pairs, one of the two coders judged far more of the vocalizations to be noncontrolling than did the other. For these pairs, much of the disagreement concerned whether questions were or were not controlling (Categories 3 and 11 versus 20 and 21) and whether suggestions were or were not controlling (Category 1 versus 18).

#### *Measures of Intrinsic Motivation*

The widely used free-choice measure (Deci, 1972) involves surreptitiously determining the amount or percentage of time that a subject spends working on the target task when he or she is alone and has no experimenter-related reason for engaging in the activity. Thus, during each of the two 5-min free-choice periods, when the child was alone in the room, the time that he or she spent with the task that had been the target for the preceding play period was determined from the videotapes. The times for the two free-choice periods were combined and represented as the percentage of free-choice time spent on the target task.

Pre- and postexperimental questionnaires were used to assess the children's intrinsic interest in the target activities (Legos and Lincoln Logs). On the preexperimental questionnaire, the children responded on a 4-point Likert-type scale to questions concerning how much they like each of five different tasks—the two target tasks plus Tinker Toys, building blocks, and jigsaw puzzles. The postexperimental questionnaire also used 4-point scales but asked two questions about each of the two target tasks: "How much did you like \_\_\_\_?" and "How much fun did you have playing with \_\_\_\_?"

The correlation between the preexperimental liking for Lincoln Logs and the sum of the two questions that assessed postexperimental liking for that task was nonsignificant. The comparable correlation for pre- to postexperimental liking of Legos was .39 ( $p < .01$ ). It therefore appears that the majority of the variance in postexperimental toy liking was not a function of preexperimental liking. On the other hand, postexperimental liking for each of the two play activities correlated .77. Thus, because free-choice time for the two activities was combined, the liking ratings of

TABLE 2  
 MEANS, STANDARD DEVIATIONS, AND RANGE FOR PERCENTAGE OF MATERNAL VOCALIZATIONS THAT WERE CONTROLLING, THE PERCENTAGE OF FREE-CHOICE TIME SPENT WITH THE TARGET TASKS, AND THE PERCENTAGE OF "VERY INTERESTING" RESPONSES TO THE POSTEXPERIMENTAL INTRINSIC INTEREST QUESTIONS ( $n = 26$ )

	Mean	Standard deviation	Range
Percentage of maternal vocalizations coded controlling	.46	.12	.28 to .63
Percentage of free-choice time spent with target toys	.72	.28	.12 to 1.0
Child's expressed interest in the target activities	.86	.29	.00 to 1.0

the two tasks were also combined to serve as a supplemental index of intrinsic interest. As it turned out, no child gave a response to any of the four postexperimental questions that was lower than 3 on the 4-point scale. Thus, for consistency, to have all three of the critical variables expressed as percentages, we calculated the percentage of the four questions to which the child responded with "4" (viz, "liked it very much" or "very much fun") and used that as the intrinsic interest index.

The behavioral (i.e., free-choice) measure and the self-report (i.e., liking) measure of intrinsic motivation were not significantly correlated. Although this seems somewhat troubling, most past experiments on intrinsic motivation that have employed young children as subjects have also reported a lack of correlation between the behavioral and attitudinal measures of intrinsic motivation (Quattrone, 1985).

## RESULTS

For descriptive purposes, the means, standard deviations, and range of the three measures appear in Table 2. The hypothesis of this study, namely that maternal controllingness would be associated with low levels of intrinsic motivation in children, was tested by the correlations of controllingness with both free-choice activity and self-reports of intrinsic interest. Both correlations were significantly negative: Controllingness correlated  $-.34$  ( $p < .05$ ) with the free-choice measure of intrinsic motivation and  $-.33$  ( $p < .05$ ) with the expressed interest in the target activities, thus supporting the hypothesis.

Given the large variability in the number of maternal vocalizations, we correlated the number of vocalizations with the codings of maternal controllingness and with the child's free-choice and interest measures. For number of vocalizations and coded controllingness,  $r = .13$ , ns; for number of vocalizations and free-choice time,  $r = .22$ , ns; and for number



of vocalizations and interest,  $r = .08$ , ns. It appears that the amount of talking a mother does is not a good indicator of her controllingness and is not clearly related to her child's intrinsic motivation.

### DISCUSSION

Much research has been done within laboratory settings indicating that intrinsic motivation of individuals, ranging from preschoolers to college students, tends to be undermined by the administration of controlling events such as task-contingent rewards (Deci, 1971) or by the controlling administration of any event such as the setting of limits or the provision of positive feedback (e.g., Koestner et al., 1984; Ryan, 1982; Ryan et al., 1983). According to Deci and Ryan (1987), this occurs because control diminishes people's experience of self-determination, thus thwarting satisfaction of their intrinsic need for autonomy. The present study extended those findings to actual mother-child interactions by using an adapted paradigm with both a free-choice behavioral measure (Deci, 1971) and a self-report measure (e.g., Harackiewicz, 1979) of intrinsic motivation.

The current finding of a negative relation between maternal control and children's intrinsic motivation adds robustness to the previous findings from laboratory experiments on intrinsic motivation and field studies of parenting practices. More importantly, it helps to bridge these two research literatures. This is important because the findings from the lab experiments have detailed the effects on intrinsic motivation of a wide variety of specific factors, including types of feedback, rewards, limit setting, and goal-setting, all of which are highly relevant for prescriptions regarding child-rearing practices.

Subjects in the present study were 6 or 7 years old. It is noteworthy that the results with these subjects are conceptually parallel with those from the Grolnick et al. (1984) study of 1- to 2-year-olds and the Grolnick and Ryan (1989) study of 8- to 12-year olds. In each case, maternal controllingness was found to correlate negatively with intrinsic motivation and self-regulation. In part, this consistent finding across the first 12 years of a child's life is important because it has implications for the processes that mediate the negative relation.

Some theorists have interpreted the negative correlation in terms of the self-attributional process of discounting an internal cause such as intrinsic motivation in the presence of a compelling external cause such as a reward (e.g., Lepper & Greene, 1975). That mediating process, of course, requires the ability to employ the discounting principle. An alternative interpretation that we have consistently advocated is that intrinsically motivated behavior is based in the innate need to be self-determining and maternal controllingness thwarts satisfaction of that need, thus undermining intrinsic motivation.

Research by Kun (1977), Morgan (1981), and Smith (1975) has indicated

that children younger than about 8 years do not employ the discounting principle. Thus, it seems unlikely that the subjects in the present study would have engaged in "discounting," and it is certainly the case that the 1-year-olds in the Grolnick et al. (1984) study would not. In contrast, the need to feel autonomous, which we posit is innate and operates at all ages across the lifespan, could easily be experienced as thwarted, without attributional mediation (Zajonc, 1980), whenever one feels even vaguely pressured or directed. From this perspective, the negative relation between contextual controllability and individuals' intrinsic motivation would be expected at all ages. Thus, it seems that, although the activities one finds intrinsically motivating surely change with age, the need to feel autonomous in order to be intrinsically motivated does not.

The present study was designed in part to explore whether it is possible to specify, relatively objectively, what types of vocalizations are likely to be experienced by young children as controlling. Thus, the measure of maternal controllability involved two independent observers coding each vocalization made by the mother into 1 of 24 categories (and thus three super-categories, see Table 1) that had previously been devised by the researchers. Coders were given the list of categories and, without training in the meaning of the descriptors, were asked to code each vocalization.

This method can be contrasted with the rating procedure employed in most studies of ongoing behavior (e.g., Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982), in which trained observers give their subjective impressions of target individuals on one or more relevant dimensions.

The fact of the negative correlations between the coded controllability of mothers' vocalizations and the intrinsic motivation of their children suggests that the categories considered controlling were appropriate. However, the relatively low reliability of the actual vocalization codings suggests that our use of the category descriptions in Table 1 by untrained coders was only moderately successful. As noted, most of the disagreement among coders concerned whether suggestions and questions were controlling (categories 1, 3, and 11) or noncontrolling (categories 18, 20, and 21). This suggests that it is necessary to take one (or both) of two additional steps to improve the reliability of the method. First, providing more precise descriptors of each category might improve reliability. For example, category 2, rather than simply saying "Controlling responses to the child's questions" could be elaborated with a statement like "This would include responses that indicate or imply something the child should do or something that is a right or wrong behavior." Along with this, some examples could be given.

Second, the coders could be given training about the meaning of the categories. For example, a group of coders could listen to some sample tapes, along with a researcher, and code the vocalizations. They could then compare their codings with each other and discuss why they placed

each vocalization in the category they did. The researcher could lead the discussion and be sure the concepts were being interpreted correctly. Such a method would, presumably, lead to greater agreement.

It is certainly the case that the degree of controllability of a vocalization is partly a function of paralinguistic or nonverbal factors that signal the emotional flavor of the words. In the present study, coders had such information available, for they followed the tapes while they did the codings, but they had not been trained to attend to and interpret such cues. Thus, future studies that train coders could attend to this subjective information as well as to a more detailed consideration of the verbalizations themselves. Whether it is necessary to attend to such subjective information to achieve high reliability is, of course, an empirical matter.

A coding method that involves only objective descriptions of categories and also leads to high intercoder reliability would have the advantages of allowing greater theoretical precision in specifying the objective components of a controlling interpersonal climate and facilitating the design of training interventions for parents and teachers. However, training in subjective as well as objective information, resulting in a kind of amalgam of the coding and rating procedures, might be necessary to achieve a very high level of agreement about the extent to which a social context is controlling.

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