Developmental Psychology
1990, Vol. 26, No. 5, 721-730

0012-1649/90/$00.75

Development of Inhibition During Childhood: Evidence for Situational Specificity and a Two-Factor Model

Jens B. Asendorpf
Max-Planck-Institut für psychologische Forschung
Munich, Federal Republic of Germany

The inhibition of 99 children was observed from the start of preschool through Grade 1 in multiple settings: adult strangers, dyadic play with unfamiliar and familiar peers, and regular free play in class. A multisetting–multimethod–multioccasion analysis revealed (a) a high longitudinal stability of inhibition toward strangers and a medium stability of inhibition in class, (b) a decreasing consistency between inhibition in class and inhibition toward strangers, (c) an increasing consistency between inhibition in class and being ignored or rejected by classmates, and (d) no detrimental effect of children's inhibition toward strangers on their dyadic play with familiar peers. These results are discussed in terms of a 2-factor model of inhibition that is linked to Gray's concept of the behavioral inhibition system. It is assumed that both unfamiliarity and social-evaluative concerns contribute to individual differences in inhibition in childhood.

When children encounter a new environment, a novel object, or a stranger, they often become inhibited. They are hesitant in exploring the environment or the object, or their social behavior is inhibited, resulting in long latencies of responding; in the presence of an unfamiliar peer, children tend to regress to less mature forms of play (Asendorpf, in press; Doyle, Connolly, & Rivest, 1980).

Inhibition in unfamiliar social and nonsocial environments is also a major source of individual differences in children's behavior. Kagan, Reznick, Clarke, Snidman, and Garcia-Coll (1984) coined the term *behavioral inhibition toward the unfamiliar* to describe these differences. The use of this term is appropriate because lay people, as well as psychologists, use a variety of descriptors, depending on the inhibiting situation, to describe in everyday language these individual differences (e.g., *cautious* vs. *bold, sensitive* vs. *adaptable, shy* vs. *social;* Kagan et al., 1984).

For social situations, another advantage of this term is that it is less likely to be confused with *unsociability* or *avoidance* than is the lay term *shy* or the concept of the *slow-to-warm-up child* (Thomas, Chess, Birch, Hertzig, & Korn, 1963). From a motivational point of view, inhibition refers to an approach–avoidance conflict: A person is motivated to approach another person, but this approach tendency is inhibited. This motivational state is different from disinterest in the other person (unsociability, no approach and no avoidance tendency) or from actively avoiding this person (avoidance tendency, no approach tendency). Similarly, interindividual differences in social inhibition must be distinguished from those in unsociability and social avoidance (cf. Asendorpf, in press).

Interindividual differences in inhibition toward the unfamiliar show a substantial temporal stability and a moderate consistency across different social and nonsocial unfamiliar situations beyond the age of 21 months (Bronson, 1981; Garcia-Coll, Kagan, & Reznick, 1984; Kagan & Moss, 1962; Kagan et al., 1984; Kagan, Reznick, & Snidman, 1987; Kagan, Reznick, Snidman, Gibbons, & Johnson, 1988; Reznick et al., 1986), although the stability and the consistency data in most studies of Kagan and associates are inflated because they examined extreme groups of very inhibited or very uninhibited children.

In a recent study, Kagan, Reznick, and Gibbons (1989) followed an unselected sample of 68 children from 14 months to 4 years of age and found a significant stability of inhibition over this age period only for extremely inhibited versus uninhibited children. On the other hand, Broberg, Lamb, and Hwang (in press) obtained a correlation of .38 for inhibition between 16 and 40 months of age for an unselected sample of 136 children. Thus, it is presently controversial whether inhibition in early childhood is better conceptualized as a continuous personality trait or as a discrete personality type.

In social situations, it is not clear whether it is only the unfamiliarity of the situation that contributes to individual differences in inhibition toward strangers. Studies are lacking that compare inhibition toward unfamiliar persons with a control situation that differs only in the familiarity of these persons. Such studies are needed to demonstrate that inhibition toward strangers is a specific lack of social performance in the presence of strangers rather than a general lack of social competence.

Even if it can be shown that inhibition toward strangers is irrelevant in familiar social situations, other situational factors that also contribute to individual differences in inhibited behav-

The study reported here was conducted as part of the Munich Longitudinal Study on the Genesis of Individual Competencies (LOGIC) funded by the Max Planck Society. I wish to thank the children, parents, and teachers involved in this study for their cooperation, the members of the LOGIC group for their assistance in data assessment, Michael Rottner for running most of the statistical analyses, and three anonymous reviewers for their helpful comments.

Correspondence concerning this article should be addressed to Jens B. Asendorpf, Max-Planck-Institut für psychologische Forschung, Leopoldstrasse 24, D-8000 München 40, Federal Republic of Germany.

ior may exist. Studies of adults' inhibition suggest that it can be caused by two different situational factors: unfamiliarity and social–evaluative concerns (Asendorpf, 1989). The same may be true for children.

Research on the concomitants and consequences of children's sociometric status in peer groups suggests that a subgroup of rejected children is characterized by inhibition or social withdrawal (French, 1988; Rubin, Hymel, LeMare, & Rowden, 1989). At present, it is controversial whether this also applies to neglected children (Coie, Dodge, & Coppotelli, 1982; Rubin et al., 1989). Although the relation between sociometric neglect or rejection and inhibition is far from clear, an alternative approach is to link inhibition more directly with experiences of negative social evaluation within an information-processing framework of social competence (Dodge, Pettit, McClaskey, & Brown, 1986). Frequent experiences of being ignored or rejected by peers may lead to social–evaluative concerns that may in turn trigger the inhibition of sociable behavior. This hypothesis transcends the present focus on inhibition toward the unfamiliar, links the concept of inhibition with perceived peer neglect and rejection (and, more indirectly, with peer group status), and brings research on inhibition in childhood more in line with research on inhibition in adulthood.

The present study investigated the situational specificity of individual differences in inhibition during childhood from a longitudinal perspective. An unselected sample of German children was observed from the start of preschool through Grade 1 in multiple settings: with adult strangers, in dyadic play with unfamiliar and familiar peers, and in regular free play in class. This approach allows for a comparison of inhibition toward unfamiliar peers with inhibition in a control situation involving familiar peers and of inhibition toward adult and peer strangers with inhibition in a well-established, long-lasting peer group. The latter comparison is particularly powerful in this study because German children often begin preschool at 3–4 years of age and remain in the same class with the same teachers for 3 years; every year, the oldest third of the class is replaced by a new, youngest third. Compared with Anglo-American systems, this system provides a more stable class environment and, hence, the development of more stable relationships with classmates.

In accordance with this two-factor view of inhibition, one general and four specific hypotheses were tested. The general hypothesis was that interindividual differences in inhibited behavior show a *setting specificity.* Inhibition toward strangers and inhibition in class were expected to be more consistent within one of these two settings than across the two settings, both concurrently and across different ages. This setting specificity was hypothesized to be reflected by four more specific effects. First, the consistency between inhibition toward strangers and inhibition in class would decrease over time because the class setting would become more familiar and children would accumulate more and more social–evaluative experiences that would, in turn, give rise to social–evaluative inhibition. Second, because of these differential learning experiences, the interindividual differences in inhibition in the class setting would be less temporarily stable than those in inhibition toward strangers. Third, inhibition in class would become increasingly predictable by the rate of being ignored or rejected by classmates. Fourth, inhibition toward strangers was expected not to affect children's dyadic play with a familiar classmate in a familiar environment.

Different types of measures were applied to study inhibition in different settings. This was due to the different organization of behavior in different settings and to the different knowledge of informants (parents cannot observe their children's behavior in school but have good opportunities for observing their behavior toward strangers; for teachers, the opposite holds true). Because at least two different measures of inhibition were obtained for each setting, the robustness of the findings could be evaluated by trying to replicate the results across measures. Furthermore, the reliability of the data was increased in two different ways.

First, correlations between measures were aggregated. This approach has not often been used in developmental research; it is an extension of Campbell and Fiske's (1959) multitrait–multimethod approach to a multisetting–multimethod–multioccasion analysis. The reliabilities and the convergent validities of measures within the same settings are compared with the discriminant validities of these measures across different settings, both for synchronic correlations that compare different measures assessed at the same age and for diachronic correlations that compare measures across different ages. Structurally, this procedure is equivalent to the multitrait–multimethod–multioccasion analysis of personality ratings described by Conley (1985).

Second, different measures of the same setting were aggregated if these measures intercorrelated sufficiently highly across subjects. This strategy of data reduction often reduces unreliability and increases validity (cf. Epstein, 1979, 1986).

Applying different measures to different settings leads to the problem that setting-related differences may result from differences among the reliabilities of the measures rather than from differences between the settings. This problem was resolved by correcting correlations for attenuation.

Method

Subjects

A sample of 99 children (52 boys and 47 girls) served as subjects. This sample was recruited from the sample of the Munich Longitudinal Study on the Genesis of Individual Competencies (LOGIC; Weinert & Schneider, 1986) by using a multistep exclusion procedure. The original LOGIC sample ($N = 194$) consisted of children born between August 1980 and July 1981 who started to attend 20 preschools in the Munich area in the fall of 1984 and whose first language was German. This sample is rather unbiased because the schools were selected from a broad spectrum of neighborhoods, and more than 90% of the parents who were asked for permission gave their consent for studying their child.

For the study of social inhibition, the sample was first reduced to the 126 children who regularly attended the daily 1-hr free-play period in their class. During the next 3 years, 12 children were lost because they moved away from the Munich area. In this period, not a single parent or child withdrew permission for testing. Because of the low and unsystematic attrition rate of 9.5%, no attempts were made to control statistically for subject attrition. Another 15 children were additionally excluded from analysis because they had more than one missing value, because of illness, in the four major assessments of inhibition per year.

Table 1
Procedures and Measures for the Assessment of Social Inhibition

Procedure/measure	Setting	Year of assessment 1	2	3	4
Parental inhibition scale	Stranger	X	X	X	X
Interaction with adult stranger	Stranger				
Latency to unsolicited utterance		X		X	
Dyadic play with peer stranger	Stranger				
Latency to first request			X		X
Rate of interactive behavior			X		X
Rate of isolation			X		X
Frequency of social initiatives			X		X
Triadic play with peer strangers	Stranger				
Latency to first request					2×
Dyadic play with classmate	Familiar				
(Measures are the same as for play with peer stranger.)			X	X	
Regular free play in class	Class				
Rate of wait-and-hover and rate of failure in contact initiations		X	X	X	
Teacher Q-sort	Class	X	X	X	

The 99 children were studied in 4 consecutive years, beginning in the fall of 1984, when their average age was 3 years, 9 months (range = 3 years, 3 months–4 years, 3 months). Repeated assessments of the same measures were always scheduled in 12-month (±2 months) or 24-month (±2 months) intervals.

Procedures and Measures

Children's inhibition was assessed by judgments (parental scale, teacher Q-sort) as well as by behavioral observation (direct observation in class, coding of videotaped behavior). Table 1 provides an overview of the procedures and measures that are relevant to the present study. A more detailed description is provided by Asendorpf (1987a).

Parental inhibition scale. During a visit to the Max Planck Institute, the parent who accompanied the child (nearly always the mother) answered a questionnaire that contained 2 × 4 questions to be rated on a 7-point scale (*never–always*); 4 referred to inhibition to adult strangers and 4 parallel questions referred to inhibition to peer strangers (e.g., "My child is shy toward unknown adults," "My child is shy toward unknown children"). These 8 items were randomly distributed among 40 other items of the same response format. The internal consistency of the 8-item scale was very high for all 4 years of assessment (Cronbach's α = .93–.95).

Interaction with an adult stranger. The classic stranger situation as used in research on wariness (Sroufe, 1977) and on attachment (Ainsworth, Blehar, Waters, & Wall, 1978) was modified. One problem of the classic stranger situation with older children is that it can be difficult to distinguish between children who are inhibited in the company of a stranger and those who are simply disinterested in the stranger. To overcome this problem, the children were motivated to make contact with the stranger as follows.

Child and mother sat in the observation room. The child had rather uninteresting toys to play with. If the child lost interest in the toys (stopped playing, started looking around, usually after 1–3 min), a female stranger appeared with a transparent bag full of interesting toys, greeted mother and child briefly, sat down about 1 m away from the child, and started unpacking the bag. The stranger responded only to the child's initiation attempts; she did not actively approach the child. If the child did not initiate a conversation with the stranger within 3 min, the stranger tried to start speaking about the toys. In any case, there was a preinteraction period of 0–3 min until the first unsolicited utterance of the child or the first utterance of the stranger and an interaction period of 2 min following contact initiation by the child or the stranger. Both periods were videotaped. Exactly the same procedure was used in Years 1 and 3, with a different stranger and different age-appropriate toys for the two assessments.

Two coders independently coded the latencies (s) of children's first unsolicited utterance directed to the stranger for both assessments (intercoder *r*s = .93 for Year 1 and .94 for Year 3; coding disagreements were resolved by consensus). The latencies were approximately normally distributed, except for a strong ceiling effect (the maximum latency of 300 s was obtained by 41% [Year 1] and 12% [Year 3] of the children). Therefore, all correlations with these latencies were corrected for this ceiling effect (cf. Alliger, Hanges, & Alexander, 1988).

Dyadic play with a peer stranger. In Years 2 and 4, children were randomly paired with an unknown child of the same gender for a 15-min (Year 2) or 10-min (Year 4) free-play session in a room of the institute that was equipped with age-appropriate toys. Videotapes of the children's behavior were coded, among other codes, for (a) the rate of interaction (comprising interactive play and conversation) and the rate of isolation (comprising being unoccupied and looking at the peer from a distance) according to Rubin's (1985) Play Observation Scale; (b) the number of requests directed to the partner according to Rubin and Emptage's (1985) Social Problem-Solving Coding System; (c) the latency (s) until the first request; and (d) the number of role initiations (comprising manager, teacher, and learner initiations) according to Stoneman, Brody, and MacKinnon's (1984) Role Relationship Coding System. Each coding system was applied by a different pair of coders; intercoder agreement was satisfactory (20% of the tapes were coded independently by both coders, and the intercoder correlations were above .82 in each case).

The latency scores showed a ceiling effect and were not distributed as a ceilinged normal distribution. However, the double-logarithmic transformation $y = \ln [\ln (x + 1) + 1]$ converted them into an approximately normal, ceilinged distribution. All correlations with these transformed scores were corrected for the ceiling effect (cf. the section on Interaction with an Adult Stranger).

In Year 4, children additionally played twice in a group of three unacquainted peers of the same gender in a similar setting (8 min free

play). Because the three latency measures obtained for the three play sessions of Year 4 were all significantly correlated, they were *z*-transformed and aggregated, yielding one latency score per child.

Because the number of children's requests and role initiations correlated above .80 for both play sessions, they were *z*-transformed and averaged, yielding an index of children's social initiatives.

Dyadic play with a familiar peer. In Years 2 and 3, children were randomly paired with a child of their preschool group of the same age and gender and were videotaped in a separate room of their school in a play setting directly comparable to the sessions with the peer stranger in Years 2 and 4 (using different toys). Behavioral coding was exactly comparable to the coding of the play sessions with the unfamiliar peers, was done by the same coders, and was equally reliable. Requests and social initiatives again correlated above .80 for both play sessions and were aggregated as described earlier.

Regular free play in class. Children's contact initiation behavior during the regular free-play period in their class in the morning was coded with the Contact Initiation Coding System (Asendorpf, 1985) by an observer sitting in the classroom. Each child was observed in Years 1, 2, and 3 for at least eight 10-min periods on at least 5 different days; average observation time per child was 98 min (Year 1), 111 min (Year 2), and 109 min (Year 3). Only two variables were considered: the rate of wait-and-hover and the rate of success among all own contact initiations. Wait-and-hover was coded whenever the child approached a single person or a group, stopped before reaching them, and looked at them for at least 3 s without speaking (cf. Dodge, Schlundt, Schocken, & Delugach, 1983; and Gottman, 1977, for the same code). Success was coded whenever the partner responded positively to the initiation attempt; failure was coded whenever the partner did not react to the initiation attempt within 10 s or reacted negatively to the attempt (cf. Asendorpf, 1985, for details). From these data, children's rate of failure was determined as the frequency of failures divided by the frequency of failures plus successes.

Interobserver agreement among the seven trained coders was checked each year by parallel observations of 10 full free-play periods. The number of initiations (agreement = 93%–94%), wait-and-hovers (κ = .90–.98), and successes (κ = .96–.99) were reliably coded. The reliability of individual differences in the rate of wait-and-hover was evaluated each year by comparing this rate in odd- and even-numbered initiations (split-half reliability). It was satisfactory in Wave 1 (α = .80) and less satisfactory in Wave 2 (.51) and Wave 3 (.69).

Teacher Q-sort. The 54-item short version of the California Child Q-Sort (Block & Block, 1980) was adapted to German by bilingual parents (Göttert & Asendorpf, 1989). In Years 1, 2, and 3, the children's main teacher provided a Q-sort description of the child. Four teachers of different schools also independently provided a prototypic Q-sort for a "shy–inhibited child"; their agreement was high (α = .92). The correlation between each child's Q-sort and the averaged prototypic Q-sorts of the four teachers is a measure of the prototypicality of the child's Q-sort for a "shy–inhibited child." The reliability of these prototypicality scores was obtained for each year by correlating the child's Q-sort separately with two halves of the averaged Q-sort prototypes for a "shy–inhibited child" and then by correlating these two prototypicality scores per child across all children. These split-half reliabilities were satisfactory (α = .84, Wave 1; .82, Waves 2 and 3).

Results

Multisetting–Multimethod–Multioccasion Analysis

Inhibition toward adult or peer strangers (stranger setting) and inhibition during free play in children's classes (class setting) were each assessed by two measures. For the stranger setting, the parental inhibition scale and children's latency to their first spontaneous utterance toward the adult stranger or to their first request directed to the peer stranger were included in the analysis. For the class setting, the teacher Q-sort measure of inhibition and the observed rate of wait-and-hover were used. Thus, one judgment and one behavioral observation were applied in both settings.

Inhibition toward strangers was assessed every year for 4 years; alternating from year to year, the stranger was an adult or a peer. Inhibition in class could be observed only during the first 3 years; in the 4th year, most of the children changed to elementary school, where a free-play setting no longer exists. This asymmetry in the design seems nevertheless appropriate because it allows both a balanced design in terms of adult versus peer strangers and full use of all available data.

Table 2 contains the reliabilities and the intercorrelations of the $(2 \times 4) + (2 \times 3) = 14$ measures of inhibition, in terms of both raw correlations and correlations corrected for attenuation. The reliabilities are the internal consistencies of the parental inhibition scale, the teacher Q-sort measure, and the observed rate of wait-and-hover (cf. Method section). The reliabilities of the latencies in Years 1–3 were estimated by rounding up their highest correlation with other variables (from .74 to .80 and from .68 to .75). The reliability of the aggregated three latency scores in Year 4 was estimated by applying the Spearman–Brown formula to their mean intercorrelation of .46.

Table 2 shows that nearly all correlations were positive; their overall mean was .40 for the uncorrected correlations and .50 for the correlations corrected for attenuation (here as well as in the following analyses, means of correlations were computed by using Fisher's *z* transformation). The means of the rows and columns of the correlation matrix can be interpreted as the overall predictive power of each measure of inhibition for all other measures of inhibition. The parental inhibition scale showed the highest predictive power and the observed rate of hovering, the lowest power; the latencies and the teacher Q-sort measure consistently fell between them.

In Table 3, the correlations of Table 2 are grouped in terms of particular types of correlations. (The suggestive abbreviations for these correlational types are adapted from Conley, 1985.) For example, the correlations of the type $S_dM_sO_s$ are those correlating the same measure (judgment or behavioral observation) between different settings for the same year of observation (synchronic correlations). Diachronic correlations (correlations between different years of observation) between different measures (type M_dO_d) are grouped in terms of their temporal order. For example, the mean of the correlations TEACHER1–HOVERING2, TEACHER2–HOVERING3, and TEACHER1–HOVERING3 can be found at the intersection of the TEACHER column and the $S_sM_dO_d$ row, whereas the inverse correlations HOVERING1–TEACHER2, HOVERING2–TEACHER3, and HOVERING1–TEACHER3 are pooled at the intersection of the HOVERING column and the $S_sM_dO_d$ row.

The first row of Table 3 contains the mean reliabilities ($S_sM_sO_s$) of the four measures of inhibition. Not surprisingly, the two judgments were more reliable than the two behavioral measures (mean reliability of all judgments = .91; of all behavioral measures, .74). More important, the mean reliability of all measures of the stranger setting was higher than the mean reliability of all measures of the class setting (.88, stranger; .77,

Table 2
Correlations Among Judgments and Behavioral Observations of Inhibition for Two Settings and 4 Years of Observation

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. PARENT1	.95	.67	.42	.42	.74	.44	.44	.25	.74	.53	.54	.28	.68	.47	.53
2. LATENCY1	.77	.80	.39	.52	.66	.68	.42	.15	.64	.74	.50	.24	.57	.44	.53
3. TEACHER1	.47	.48	.84	.38	.40	.26	.66	.28	.20	.32	.53	.12	.39	.41	.38
4. HOVERING1	.48	.65	.46	.80	.21	.30	.32	.40	.25	.41	.42	.30	.28	.15	.34
5. PARENT2	.78	.76	.45	.24	.94	.55	.52	.12	.76	.48	.42	.29	.69	.47	.51
6. LATENCY2	.52	.88	.33	.39	.66	.75	.30	.11	.43	.31	.44	.19	.27	.46	.38
7. TEACHER2	.50	.52	.80	.40	.59	.38	.82	.23	.29	.30	.64	.11	.41	.29	.39
8. HOVERING2	.36	.23	.43	.63	.17	.18	.36	.51	.05	−.04	.37	.31	.16	.00	.19
9. PARENT3	.78	.74	.23	.29	.81	.51	.33	.07	.94	.51	.33	.29	.76	.43	.47
10. LATENCY3	.61	.93	.39	.51	.55	.40	.37	−.06	.59	.80	.26	−.11	.47	.38	.37
11. TEACHER3	.61	.62	.64	.52	.48	.56	.78	.57	.38	.32	.82	.33	.36	.37	.43
12. HOVERING3	.35	.32	.16	.40	.36	.26	.15	.52	.36	−.15	.44	.69	.31	.22	.22
13. PARENT4	.72	.66	.44	.32	.74	.32	.47	.23	.81	.54	.41	.39	.93	.40	.43
14. LATENCY4	.57	.58	.53	.20	.57	.63	.38	.00	.52	.50	.48	.31	.49	.72	.35
15. ALL	.60	.67	.46	.43	.59	.49	.49	.30	.54	.47	.54	.30	.53	.46	—

Note. Subjects were 52 boys, 47 girls. *N*s for correlations range between 58 and 99 because of missing values. Reliabilities of the measures (cf. text) are underlined. Correlations below the diagonal are corrected for attenuation. Correlations with LATENCY1–3 are corrected for ceiling effects (cf. text). Numbers following the abbreviations of measures indicate the year of observation. PARENT = Parental inhibition scale; LATENCY1,3 = latency to first unsolicited utterance toward adult stranger; LATENCY2 = latency to first request directed to peer stranger (transformed; cf. text); LATENCY4 = aggregate of latencies to first request directed to peer stranger obtained in three different play sessions; TEACHER = prototypicality of teacher Q-sort for "inhibited child"; HOVERING = observed rate of wait-and-hover among all contact initiations directed to peers in class; ALL = mean of all correlations with other 13 measures (using Fisher's *z* transformation).

class). Therefore, only correlations corrected for attenuation are discussed in the following analyses.

The second row of Table 3 contains the temporal stabilities ($S_sM_sO_d$) of the measures. Again, the correlations were higher for the judgments (M = .76) than for the behavioral observations (M = .64). However, the stabilities of the latency measures (M = .73) were very close to the stabilities of the teacher judgment (M = .74). A closer inspection of the stability data for the latencies in Table 2 revealed that the stability between the two confrontations with an adult stranger was very high (.93; uncorrected, .74), whereas the stability between the two scores involving peer strangers was lower (.63; uncorrected, .46).

Table 3
Multisetting–Multimethod–Multioccasion Analysis of Inhibition

	Setting[b]														
	Strangers						Class								
Type of correlation[a]	PARENT			LATENCY			TEACHER			HOVERING			Total		
	n	*M*	*M'*	*n*	*M*	*M'*	*n*	*M*	*M'*	*n*	*M*	*M'*	*n*	*M*	*M'*
$S_sM_sO_s$	4	.94	—	4	.77	—	3	.83	—	3	.68	—	14	.84	—
$S_sM_sO_d$	6	.73	.78	6	.52	.73	3	.61	.74	3	.34	.52	18	.59	.72
$S_sM_dO_s$	4	.54	.64	4	.54	.64	3	.32	.43	3	.32	.43	7	.45	.56
$S_sM_dO_d$	6	.47	.56	6	.52	.61	3	.17	.25	3	.37	.50	18	.43	.52
$S_dM_sO_s$	3	.43	.49	3	.19	.26	3	.43	.49	3	.19	.26	6	.31	.38
$S_dM_sO_d$	3	.47	.53	3	.20	.27	6	.35	.39	6	.18	.23	18	.29	.35
$S_dM_dO_s$	3	.27	.34	3	.32	.39	3	.32	.39	3	.27	.34	6	.30	.37
$S_dM_dO_d$	3	.27	.36	3	.45	.57	6	.33	.42	6	.21	.26	18	.30	.39
S_sM_d	16	.51	.60	16	.51	.60	9	.29	.40	9	.29	.40	25	.43	.53
S_dM_s	12	.40	.46	12	.19	.25	12	.40	.46	12	.19	.25	24	.30	.36
S_dM_d	12	.24	.31	12	.36	.45	12	.36	.45	12	.24	.31	24	.30	.38
S_s[c]	28	.57	.67	28	.57	.67	15	.37	.51	15	.37	.51	43	.50	.62
S_d													48	.30	.37

Note. This table contains means of Pearson correlations (using Fisher's *z* transformation). *n* indicates the number of the averaged correlations, *M* their mean, and *M'* the mean of the correlations corrected for attenuation.

[a] S = setting; M = method; O = occasion; s = same; d = different. [b] For diachronic correlations, the means refer to correlations between the measure indicated in the column head and measures assessed later. For PARENT, LATENCY, TEACHER, and HOVERING, see Table 2. [c] Excludes the reliabilities $S_sM_sO_s$.

This difference in stability results from the fact that the adult stranger was the same for all children in a year, whereas every child had a different unfamiliar peer as a play partner; therefore, children's latency to peer strangers was a joint function of their own inhibition and the inhibition of their partner. In fact, children's latency in Year 2 correlated significantly with the parental rating of the inhibition of their partner (raw $r = .35$). Thus, the mean stability of the latencies of .73, which is surprisingly high for behavioral measures in childhood, even underestimates the true stability of inhibition toward strangers.

The row S_s contains the mean of all correlations within the two settings (excluding reliabilities), and the row S_d contains the pooled correlations between these settings. The difference between the overall means of .62 and .37 suggests a *discriminant validity* of the two types of inhibition: Inhibition toward strangers and inhibition in class are different constructs. It can be argued, however, that the correlations within settings contain the stabilities of the two judgments, which may be inflated because the judging persons remained the same in most of the cases. However, even if all stabilities are excluded by considering only correlations between different measures, the mean correlation within settings (S_sM_d) of .53 was clearly higher than the mean correlation between settings (S_d) of .37. The other rows of Table 3 can be interpreted similarly; because of space limitations, these interpretations are not worked out here.

All in all, these findings confirmed the general hypothesis of a setting specificity of inhibition. In the next sections, this setting specificity is analyzed in more detail. To yield more robust results, variables (and not correlations) were aggregated where this is possible; aggregation was always done by averaging *z*-transformed scores.

Decrease of Cross-Setting Consistency

To test the hypothesis that the consistency between inhibition toward strangers and inhibition in class decreases over time, the two measures of each setting were aggregated, yielding one inhibition score per year for each setting. There was a medium cross-situational consistency of inhibition at the beginning of preschool ($r = .47$, $p < .002$), which decreased to .30 ($p < .01$) in the second year and was only marginally significant in the 3rd year ($r = .23$, $p = .09$). This decrease was tested for significance by applying a *t* test for differences between correlations in dependent samples. Following the suggestions of Steiger (1980), the Z^* statistic was applied. The decrease between .47 (Year 1) and .23 (Year 3) was significant, $Z^*(77) = 2.03$, $p < .025$, one-tailed.

Stability of Inhibition in the Two Settings

To test the hypothesis that the stability of inhibition in class was lower than the stability of inhibition toward strangers, these stabilities were computed between Year 1 and Year 3 and then tested for a significant difference by the Z^* statistic. Because the reliabilities of the class measures were lower than the reliabilities of the stranger measures, these stabilities were corrected for attenuation. The reliability of the aggregated measures was estimated by applying the Spearman–Brown formula to their mean reliability (yielding the following reliabilities: .95, stranger, Year 1; .94, stranger, Year 3; .90, class, Year 1; .86, class, Year 3). The 2-year stabilities were much higher for the stranger setting (.75, uncorrected; .83, corrected) than for the class setting (.45, uncorrected; .57, corrected), and the difference was significant, both for the uncorrected stabilities, $Z^*(77) = 3.15$, $p < .002$, one-tailed, and for the stabilities corrected for unreliability, $Z^*(77) = 3.46$, $p < .001$, one-tailed. Thus, the decreasing cross-setting consistency of inhibition was due to a very stable inhibition toward strangers and less stable inhibition in class. A 3-year stability could be evaluated only for the stranger setting (.64, uncorrected; .69, corrected; reliability for Year 4 was .90).

Change of Means and Variances of Inhibition in the Two Settings

The increasing inconsistency of inhibition between the stranger setting and the class setting and the lower stability of inhibition in the class setting could be attributed to a familiarity effect. Children remained in the same school environment for 3 years and in a similar class structure (cf. Method section); therefore, the class setting should become more and more familiar to them, and inhibition due to unfamiliarity should decrease strongly. On the other hand, strangers remained strangers. If this interpretation is correct, the means and the variances of children's inhibition should decrease more in the class setting than in the stranger setting.

Table 4 shows that the means and the variances of all four measures of inhibition decreased between Years 1 and 3 and that this decrease was comparable between the stranger and the class setting. Thus, the increasing familiarity of the class setting alone cannot explain the decreasing consistency between the class setting and the stranger setting. An alternative interpretation is that, besides the unfamiliarity of some of the classmates, a second source of inhibition exists in the class setting that exerts an increasing influence on the interindividual differences in inhibition.

Increasing Consistency Between Inhibition in Class and Failure With Peers

It was hypothesized that such an additional source of inhibition would be the quality of children's emerging relationships with their classmates. Children who were often ignored or rejected by their peers were expected to develop expectations of being negatively evaluated by their peers and to become increasingly inhibited if they tried to initiate contact with peers.

This hypothesis needs to be qualified in two respects. First, an increasingly positive correlation between failure in contact initiations and inhibition was expected more specifically for inhibition in class after controlling for inhibition toward strangers because the effect refers not to inhibition in general but rather to the "inhibition surplus" in the class that is not attributable to inhibition toward strangers. Thus, for each year, the aggregated measure of inhibition toward strangers was *z*-transformed and subtracted from the *z*-transformed aggregated measure of inhibition in class, and this measure of children's

Table 4
Change of the Means and Variances of Four Measures of Social Inhibition Between Years 1 and 3

	Mean in year		*t* test[a]			*SD* in year		*F* test[b]		
Variable	1	3	*t*	*df*	*p*	1	3	*F*	*df*	*p*
Parental scale	3.53	3.33	2.55	78	.01	1.36	1.10	1.52	83, 84	.06
Latency (s)	218	198	1.75	70	.08	101	87	1.33	78, 80	.20
Q-sort measure	0.08	0.03	1.33	85	.19	0.35	0.33	1.13	98, 85	.56
Hovering in class	0.23	0.19	1.97	66	.05	0.17	0.14	1.49	72, 79	.08

[a] *t* test for difference between means; *df* varies because of missing values. [b] *F* test for differences between variances.

class-specific inhibition was correlated with their rate of failure in contact initiation attempts.

Second, those initiation attempts where the outcome was determined by wait-and-hover of the initiating child were excluded from the rate of failure because, otherwise, the rate of failure would have been intrinsically confounded with children's rate of wait-and-hover and, hence, with their index of inhibition in class. Table 5 presents the correlations between class-specific inhibition and the corrected rate of failure in contact initiation attempts for the 3 years of observation as well as across these years.

The correlational pattern of Table 5 suggests that children's emerging class-specific inhibition was positively related to their rate of failure in contact initiation attempts where the outcome was not due to wait-and-hover. The more children were ignored or rejected if they tried to initiate contact with classmates, the more inhibited they were according to the behavioral observation and the teacher Q-sort. In the first year of observation, no significant relation was found, but the rate of failure in the second and the third year predicted class-specific inhibition both in the same year and in the following year but not in the preceding years. This asymmetry in the predictive relations supports the interpretation favored here that frequent failures lead to increasing inhibition rather than vice versa. The differences between the correlation in Year 1 (−.13) and the correlations in Years 2 and 3 (.36 and .29) were tested as described earlier and were found to be significant, $Z^*(65) > 2.54$, $p < .01$, one-tailed, in each case.

Table 5
Correlation Between Failure in Contact Initiation Attempts With Classmates and Class-Specific Inhibition

	Failure with peers[b]		
Class-specific inhibition[a]	1	2	3
1. Year 1	−.13	−.08	−.13
2. Year 2	−.19	.36**	−.05
3. Year 3	−.10	.28*	.29*

[a] *z*-transformed index of inhibition in class minus *z*-transformed index of inhibition toward strangers. [b] Rate of failure in contact initiations with classmates, excluding successes and failures due to wait-and-hover.
* $p < .05$. ** $p < .003$.

Inhibition Toward Unfamiliar Versus Familiar Peers

To test the hypothesis that inhibition toward strangers is not related to children's dyadic play behavior with a familiar peer in a familiar environment, four behavioral measures were selected that showed substantial correlations with the parental inhibition scale for the two play sessions with an unfamiliar peer. These measures were the latency to the first request directed toward the peer, the inversed index of social initiatives (lack of social initiatives), the percentage of time not spent in interaction with the peer (lack of interaction), and the percentage of time spent in isolation (unoccupied or looking at the peer from a distance). Figure 1 shows the synchronic correlations between the parental inhibition scale and these measures for the two play sessions with an unfamiliar peer in Years 1 and 3 and for the two play sessions with a familiar peer in Years 2 and 3.

Figure 1 indicates that the parental inhibition scale correlated positively with all four measures of inhibition in both play sessions with unfamiliar peers (all eight correlations were significant, with one-tailed *p*s ranging from .001 to .01), whereas these correlations were consistently lower for the two play sessions with familiar peers (none of the eight correlations was significant, with two-tailed *p*s ranging from .14 to .87). A more direct test was to compare the correlations with familiar versus unfamiliar peers for each behavior and for each pair of play sessions. Because this comparison involved correlations of dependent samples, the Z^* statistic was again applied (cf. Steiger, 1980). Of the 4 (behaviors) × 4 (pairs of play sessions) = 16 comparisons, 12 were significant (one-tailed Z^* tests).

Thus, inhibition toward strangers as perceived by the parents appeared to have no detrimental effect on children's play with familiar peers in terms of social involvement. Children's inhibition toward peer strangers seems to be attributable to the unfamiliarity of the stranger and to the unfamiliarity of the observational setting in general. For three measures of inhibition, the parental judgments were less predictive of inhibition toward strangers when the situation was repeated. This effect might be explained by the increasing familiarity of the observational setting.

Discussion

This study analyzed the situational specificity of the differential development of inhibition. In a longitudinal study, individ-

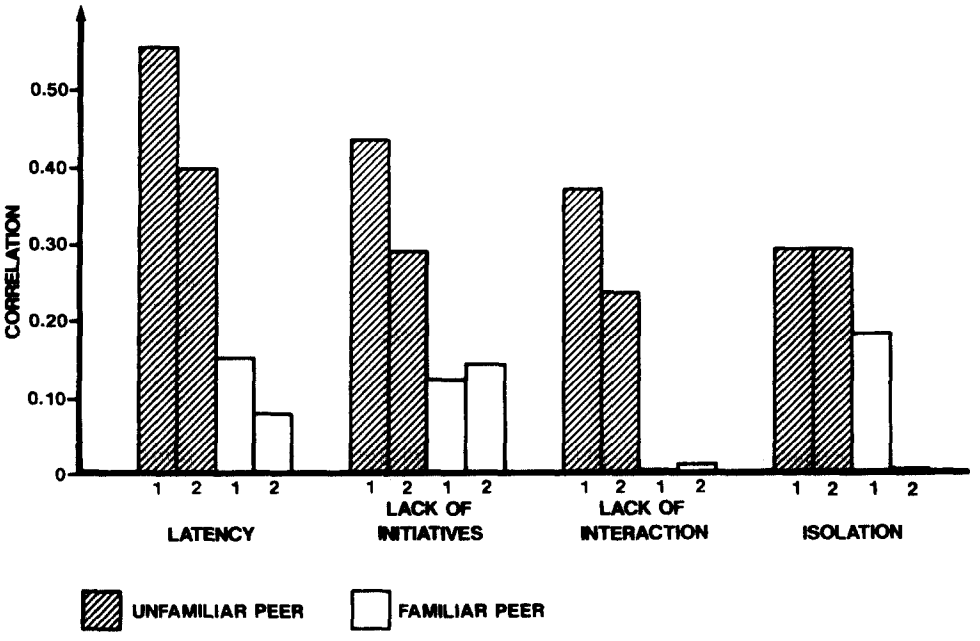

Figure 1. Consistency between the parental inhibition scale and four behavioral indicators of inhibition toward unfamiliar and familiar peers, each obtained for two dyadic play sessions (1 and 2).

ual differences in inhibition were compared among three social settings: confrontation with adult strangers and dyadic play with unfamiliar peers, the regular free-play setting in school, and dyadic play with familiar peers. Even after controlling for differences in the reliability of the measures of inhibition, a clear setting specificity of the development of inhibition was found.

Inhibition toward strangers in an unfamiliar environment showed a high stability of .75 between ages 4 and 6 years and of .64 between ages 4 and 7 years. This stability is nearly as high as the stability of IQ differences in this age range (e.g., .79 and .72; Wilson, 1983). The most comparable data stem from the studies of Reznick et al. (1986) and Kagan et al. (1988), who found, for an aggregated index of inhibited behavior toward unfamiliar persons and objects, a stability of .67 between 4 and 5½ years and of .54 between 4 and 7½ years. These correlations are inflated, however, because they refer to extreme groups of very inhibited or very uninhibited children. The present study shows that inhibition toward strangers is very stable during the preschool and kindergarten years, even for an unselected sample of children. Thus, inhibition toward strangers can be conceptualized as a continuous dimension of personality. Kagan et al.'s (1988) finding that inhibition was not stable between 14 or 20 months and 4 years in an unselected sample of children might be attributed to the younger sample, although Broberg et al. (in press) found evidence of stability for another unselected sample of children between 16 and 40 months.

Inhibition toward peers as observed during the regular free-play period in children's familiar classes showed a lower stability over the same age period, indicating differential–developmental change. This change resulted in a decreasing consistency of inhibition between the stranger setting and the class setting.

What was observed here was not only an increasing irrelevance of the trait of inhibition toward strangers in a more and more familiar setting. After nearly 3 years of socialization in the same class, children still showed a substantial variation in inhibition and only a slightly less overall inhibition than 2 years before; a comparable decrease in overall inhibition was also found for the stranger setting. Thus, what was observed was the emergence of a new setting-specific trait.

Which situational factors need to be present to observe inhibition toward strangers and inhibition in class? A comparison between play sessions with unfamiliar and familiar peers showed that inhibition toward strangers could be accounted for by the unfamiliarity of the peer and the observational setting. This finding was replicated for both the unfamiliar and the familiar peer play situation. Children's inhibition toward strangers does not appear to reflect a general lack of social competence because inhibited children seem to interact normally with familiar peers.

The question of which situational factors contribute to the emergence of the new trait of inhibition in class is more difficult to answer. It is clear, however, that any answer must transcend the construct of behavioral inhibition to the unfamiliar by including other sources of inhibition as well. When the effect of inhibition toward strangers was removed from inhibition in class, the remaining class-specific form of inhibition was increasingly associated with children's failure if they tried to initiate contact with classmates; the correlational pattern suggests that experiences of failure precede increased inhibition rather than vice versa. Thus, social–evaluative concerns due to experiences of being ignored or rejected by peers seem to be a second situational factor that contributes to inhibition in addition to unfamiliarity.

If both unfamiliarity and social–evaluative concerns are con-

sidered as antecedents of inhibition, all data of the present study can be interpreted in a consistent framework. The medium consistency between the stranger setting and the class setting in the first year of preschool can be attributed to the fact that the class environment was still a rather unfamiliar one at the time of observation (4–6 months after the start of preschool). Later, the mean and the variance of inhibition to unfamiliarity decreased, but this decrease was apparently compensated to a great extent by an increase of social–evaluative inhibition due to experiences of being ignored or rejected by classmates. Consequently, the consistency between inhibition toward strangers and inhibition toward classmates decreased but the consistency between failure in contact initiations and inhibition toward classmates increased. Finally, the parental judgment of inhibition toward strangers predicted inhibited behavior toward unfamiliar peers but not inhibited behavior toward familiar peers in a familiar setting because inhibition toward strangers reflects a trait specific to unfamiliar situations rather than a general lack of social competence.

This two-factor view of inhibition in social situations is consistent with the model of interindividual differences in inhibition proposed by Gray (1982, 1987). According to this model, a "behavioral inhibition system" mediates the inhibition of sociable behavior in response to three different classes of stimuli: novel stimuli, conditioned cues for punishment, and conditioned cues for frustrative nonreward.

Interindividual differences in the "strength" of the behavioral inhibition system (its threshold and intensity of responding) affect the behavior in novel environments, particularly toward strangers, and the behavior in social–evaluative situations. This source of interindividual differences in inhibition is situated within persons; it may reflect stable physiological differences between persons. The resulting type of inhibition should be cross-situationally general as far as situations that give rise to inhibition at all are considered. Therefore, it seems appropriate to label this kind of inhibition *general inhibition.* The best way of assessing general inhibition would be to study the response toward strangers or novel environments, because in these situations the stimulus side (the unfamiliarity of the situation) can be experimentally controlled most easily.

According to Gray's (1982, 1987) model, the second source of interindividual differences in social inhibition arises from person–environment relationships. Different persons can attach different social–evaluative meanings to the same person or group. Whether a child is inhibited in the presence of a classmate depends not only on the child's general inhibition, but also on the relationship with this classmate. Frequent experiences of being rejected (punishment) or ignored (frustrative nonreward) by classmates may lead to stable expectancies of negative or insufficiently positive social evaluation; these expectancies may trigger the behavioral inhibition system.

The paradigm of classical conditioning to which Gray (1982, 1987) referred may not be sufficient to fully account for this form of social–evaluative inhibition in children. Explanatory attempts that include higher order cognitive processes such as Schlenker and Leary's (1982) self-presentation approach to social–evaluative anxiety seem to be more appropriate. According to this view, social–evaluative inhibition arises when people are motivated to make a particular impression on others but doubt that they will do so because they expect unsatisfactory impression-relevant reactions from others. This kind of inhibition requires cognitive capacities for reflecting on one's own behavior, as well as on the impressions that others might form about this behavior. Although this approach has found its major empirical support in studies of adults (Asendorpf, 1987b, 1989; Leary, 1986), its value for explaining social–evaluative inhibition among children is still unexplored. The self-presentation approach to social interaction may prove to be a fruitful theoretical framework for guiding future studies on social–evaluative inhibition in childhood.

The distinction between inhibition toward strangers and social–evaluative inhibition drawn here is related to, but by no means identical with, Buss's (1980, 1986) concepts of *fearful shyness* and *self-conscious shyness.* Buss assumed that people high in fearful shyness are particularly sensitive to novelty, to the intrusion of others into their personal space, and to social evaluation, whereas those high in self-conscious shyness are especially reactive to becoming the center of others' attention. Buss based this distinction on the assumption that becoming the center of others' attention induces a particular state of self-attention (public self-awareness) that in turn triggers shyness. People who easily and excessively experience public self-awareness are hence, according to Buss, prone to shyness.

The problem with this distinction is that negative social evaluation and the anticipation of being evaluated are nearly inevitably accompanied by heightened public self-awareness, but not vice versa (some people enjoy being the center of others' attention), whereas Buss (1980, 1986) assumed that public self-awareness per se triggers shyness. Consistent with research on adults' social–evaluative inhibition (cf. Asendorpf, 1987b, 1989), I suggest that the sensitivity to novelty characterizes one type of inhibition, whereas the sensitivity to social evaluation *and* to public self-awareness gives rise to another kind of inhibition. In the present study, public self-awareness was not investigated, but the difference between inhibition to strangers (novelty) and inhibition in the class setting (evaluative inhibition) is at odds with the two kinds of shyness postulated by Buss (1980, 1986); he would consider both to be fearful shyness.

Future studies should try to replicate the finding that the consistency between inhibition toward strangers and inhibition in a well-established peer group decreases the longer children participate in the group; any transition into a new, long-lasting social setting can be used in such studies. Furthermore, social–evaluative inhibition in childhood needs to be analyzed in more detail by comparing inhibition toward strangers with inhibition in various types of social–evaluative situations. Knowing more about the sources of children's evaluative concerns would help researchers to understand the nature of inhibition better.

Last but not least, the present study also speaks to the issue of inhibition as a social–emotional problem. It suggests that children who are characterized by a strong general inhibition will have problems again and again when they are confronted with unfamiliar people and environments but that they have a good chance to interact easily with others if they know them well. Although the temperamental disposition of inhibition toward the unfamiliar may be very resistant to change, these children could be supported by providing environments for them that

are very stable and by advancing their ability to develop positive relationships with others.

References

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment.* Hillsdale, NJ: Erlbaum.

Alliger, G. M., Hanges, P. J., & Alexander, R. A. (1988). A method for correcting parameter estimates in samples subject to a ceiling. *Psychological Bulletin, 103,* 424–430.

Asendorpf, J. (1985). *Manual for coding the behavior of young children during contact initiation episodes* (Research Rep. No. 7/1985). Munich, Federal Republic of Germany: Max-Planck-Institut für psychologische Forschung.

Asendorpf, J. (1987a). Social competence. In F. E. Weinert & W. Schneider (Eds.), *LOGIC—Report No. 2: Assessment procedures used in waves one to three.* Munich, Federal Republic of Germany: Max-Planck-Institut für psychologische Forschung.

Asendorpf, J. (1987b). Videotape reconstruction of emotions and cognitions related to shyness. *Journal of Personality and Social Psychology, 53,* 542–549.

Asendorpf, J. (1989). Shyness as a final common pathway for two different kinds of inhibition. *Journal of Personality and Social Psychology, 57,* 481–492.

Asendorpf, J. (in press). Shyness, unsociability, and peer avoidance. *Human Development.*

Block, J. H., & Block, J. (1980). The role of ego-control and ego-resiliency in the organization of behavior. In W. A. Collins (Ed.), *Minnesota Symposium on Child Psychology* (Vol. 13, pp. 39–101). Hillsdale, NJ: Erlbaum.

Broberg, A., Lamb, M. E., & Hwang, P. (in press). Inhibition: Its stability and correlates in 16- to 40-month-old children. *Child Development.*

Bronson, W. C. (1981). *Toddlers' behaviors with age mates: Issues of interaction, cognition, and affect.* Norwood, NJ: Ablex.

Buss, A. H. (1980). *Self-consciousness and social anxiety.* San Francisco: Freeman.

Buss, A. H. (1986). A theory of shyness. In W. H. Jones, J. M. Cheek, & S. R. Briggs (Eds.), *Shyness: Perspectives on research and treatment* (pp. 39–46). New York: Plenum Press.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait–multimethod matrix. *Psychological Bulletin, 56,* 81–105.

Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Developmental Psychology, 18,* 557–570.

Conley, J. J. (1985). Longitudinal stability of personality traits: A multitrait–multimethod–multioccasion analysis. *Journal of Personality and Social Psychology, 49,* 1266–1282.

Dodge, K. A., Pettit, G. S., McClaskey, C. L., & Brown, M. M. (1986). Social competence in children. *Monographs of the Society for Research in Child Development, 51* (Serial No. 213).

Dodge, K. A., Schlundt, D. C., Schocken, I., & Delugach, I. D. (1983). Social competence and children's sociometric status: The role of peer group entry strategies. *Merrill-Palmer Quarterly, 29,* 309–336.

Doyle, A. B., Connolly, J., & Rivest, L. P. (1980). The effect of playmate familiarity on the social interactions of young children. *Child Development, 51,* 217–223.

Epstein, S. (1979). The stability of behavior: I. On predicting most of the people much of the time. *Journal of Personality and Social Psychology, 37,* 1097–1126.

Epstein, S. (1986). Does aggregation produce spuriously high estimates of behavior stability? *Journal of Personality and Social Psychology, 50,* 1199–1210.

French, D. C. (1988). Heterogeneity of peer-rejected boys: Aggressive and nonaggressive subtypes. *Child Development, 59,* 976–985.

Garcia-Coll, C., Kagan, J., & Reznick, J. S. (1984). Behavioral inhibition in young children. *Child Development, 55,* 1005–1019.

Göttert, R., & Asendorpf, J. (1989). Eine deutsche Version des California-Child-Q-Sort, Kurzform [A German version of the short form of the California Child Q-Sort]. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie, 21,* 70–82.

Gottman, J. M. (1977). Toward a definition of social isolation in children. *Child Development, 48,* 513–517.

Gray, J. A. (1982). *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system.* Oxford, England: Oxford University Press.

Gray, J. A. (1987). Perspectives on anxiety and impulsivity: A commentary. *Journal of Research in Personality, 21,* 493–509.

Kagan, J., & Moss, H. A. (1962). *Birth to maturity.* New York: Wiley.

Kagan, J., Reznick, J. S., Clarke, C., Snidman, N., & Garcia-Coll, C. (1984). Behavioral inhibition to the unfamiliar. *Child Development, 55,* 2212–2225.

Kagan, J., Reznick, J. S., & Gibbons, J. (1989). Inhibited and uninhibited types of children. *Child Development, 60,* 838–845.

Kagan, J., Reznick, J. S., & Snidman, N. (1987). The physiology and psychology of behavioral inhibition in children. *Child Development, 58,* 1459–1473.

Kagan, J., Reznick, J. S., Snidman, N., Gibbons, J., & Johnson, M. O. (1988). Childhood derivatives of inhibition and lack of inhibition to the unfamiliar. *Child Development, 59,* 1580–1589.

Leary, M. R. (1986). The impact of interactional impediments on social anxiety and self-presentation. *Journal of Experimental Social Psychology, 22,* 122–135.

Reznick, J. S., Kagan, J., Snidman, N., Gersten, M., Baak, K., & Rosenberg, A. (1986). Inhibited and uninhibited children: A follow-up study. *Child Development, 57,* 660–680.

Rubin, K. H. (1985). *The play observation scale* (Research Rep.). Department of Psychology, University of Waterloo, Ontario, Canada.

Rubin, K. H., & Emptage, A. (1985). *A manual for coding communicative and social competence in children* (Research Rep.). Department of Psychology, University of Waterloo, Ontario, Canada.

Rubin, K. H., Hymel, S., LeMare, L., & Rowden, L. (1989). Children experiencing social difficulties: Sociometric neglect reconsidered. *Canadian Journal of Behavioural Science, 21,* 94–111.

Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin, 92,* 641–669.

Sroufe, L. A. (1977). Wariness of strangers and the study of infant development. *Child Development, 48,* 731–746.

Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin, 87,* 245–251.

Stoneman, Z., Brody, G. H., & MacKinnon, C. (1984). Naturalistic observations of children's activities and roles while playing with their siblings and friends. *Child Development, 55,* 617–627.

Thomas, A., Chess, S., Birch, H. G., Hertzig, M., & Korn, S. (1963). *Behavioral individuality in early childhood.* New York: New York University Press.

Weinert, F. E., & Schneider, W. (Eds.). (1986). *First report on the Munich Longitudinal Study on the Genesis of Individual Competencies (LOGIC)* (Research Rep.). Munich, Federal Republic of Germany: Max-Planck-Institut für psychologische Forschung.

Wilson, R. S. (1983). The Louisville twin study: Developmental synchronies in behavior. *Child Development, 54,* 298–316.

Received August 3, 1989
Revision received December 28, 1989
Accepted January 4, 1990 ■