
The Relations between Infant Negative Reactivity, Non-maternal Childcare, and Children's Interactions with Familiar and Unfamiliar Peers

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Abstract

The present study examined the influence of children's experiences during non-maternal childcare on their behavior toward unfamiliar peers. Participants included children classified as negatively reactive at four months of age (N = 52) and children not negatively reactive (N = 61), who were further divided into those who experienced non-maternal care and those who did not. Children were observed during childcare at 24 months of age and in the laboratory with an unfamiliar peer at 24 and 36 months of age, where their wariness, dysregulation, and social engagement were assessed. Within the negatively reactive childcare group, children's positive interactions with peers during childcare at 24 months predicted lower levels of wariness toward an unfamiliar peer at 36 months. This relation was not significant for children not classified as negatively reactive. The findings suggest that the influence of non-maternal childcare is dependent on a child's temperament and on the nature of peer interactions during care.

Keywords: temperament; childcare; peer interactions; early childhood

Introduction

As early as toddlerhood, children begin to develop social skills and engage in social interactions in complex ways (see Coplan & Arbeau, 2009). Young children's interactions with peers include helping and sharing behaviors and other prosocial acts (Eisenberg, Fabes, & Spinrad, 2006), as well as fighting and other signs of aggression [National Institute of Child Health and Human Development Early Child Care Research Network (NICHD ECCRN), 2001]. As they get older, children enjoy the companionship and social support that peers provide, and positive peer relations lead to greater feelings of self-worth and social competence (Laursen, Furman, & Mooney,

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2006). In addition, being accepted by the peer group, having friends, and, most importantly, having high-quality friendships helps protect older children from being victimized by bullies (Malcolm, Jensen-Campbell, Rex-Lear, & Waldrip, 2006).

For some children, however, social experiences are a source of stress and anxiety. Specifically, children with the temperament of behavioral inhibition exhibit wariness, shyness, and reticence in the presence of unfamiliar people, including peers (Fox, Henderson, Marshall, Nichols, & Ghera, 2005). These children typically withdraw from interactions in novel or highly stimulating environments and, as a consequence, experience fewer social interactions than their non-inhibited age-mates (Coplan, Rubin, Fox, Calkins, & Stewart, 1994). Researchers have identified early behavioral precursors to behavioral inhibition, including negative reactivity in early infancy, characterized by high motor and negative emotional reactivity to novelty (Fox, Henderson, Rubin, Calkins, & Schmidt, 2001). Studies have shown that about one third of negatively reactive infants go on to be classified as behaviorally inhibited during toddlerhood (Fox et al., 2001). These children are more likely to experience negative peer interactions, including rejection and victimization from peers, if their behavioral inhibition persists or worsens with age (see Rubin, Bowker, & Kennedy, 2009). Negative experiences with peers, in turn, can contribute to continuity in inhibited and anxious symptoms over time as children avoid the negative social interactions that they come to expect (Ladd, 2006). Furthermore, continuity in inhibition across childhood has been associated with greater incidence of anxiety, including levels that extend into the clinical range, in adolescence (Chronis-Tuscano et al., 2009).

Given that children who are reticent or inhibited when they are young often face repeated, negative interactions with peers across development, an important research goal is to determine early environmental factors that may lead these children to withdraw less and engage more in social situations in a positive and successful way. Although some research on the interactions between children's temperament and their peer relations has focused on early childhood (e.g., Gazelle & Ladd, 2003), we know little about the role of early, consistent exposure to peers, like that which occurs in a childcare setting, on continuity or discontinuity in temperament. The purpose of the present study was to examine young children's experiences during childcare as one environmental factor that may buffer against the negative social outcomes associated with high negative reactivity, a precursor to behavioral inhibition, including wariness in the presence of unfamiliar peers.

When seeking to determine environmental factors that shape the trajectories of children's behavioral inhibition, researchers have primarily focused their attention on maternal behaviors and characteristics (Degnan & Fox, 2007; Degnan, Henderson, Fox, & Rubin, 2008; Hane, Cheah, Rubin, & Fox, 2008). Degnan and colleagues, for example, found that maternal neuroticism and depressive symptoms were positively related to continuity in infant negativity and social wariness during middle childhood. In addition, both maternal positivity and negativity have been found to influence children's social withdrawal during middle childhood in children classified as shy or socially withdrawn in early childhood (Hane, Cheah, et al., 2008). Specifically, children who were shy as four-year-olds were more likely to persist in that behavior at the age of seven if they had mothers who were hostile and used negative control strategies or if they had mothers who displayed low levels of positive affect. Similarly, Rubin and colleagues (Rubin, Burgess, & Hastings, 2002; Rubin, Cheah, & Fox, 2001) found that oversolicitous, intrusive maternal parenting was related to inhibition in toddlerhood and reticence in the preschool years. Although mothers play a central role in the

socialization of children, it is important to consider other socialization agents or influences in order to develop a comprehensive understanding of the developmental course of behavioral inhibition.

Peers provide an additional source of socialization, beginning as early as infancy (see Hay, Caplan, & Nash, 2009) and continuing as children spend more time at school and in extracurricular activities. As such, non-familial relationships and peer interactions shape the trajectories of children's behavioral inhibition across development. Indeed, researchers have found evidence for the effects of children's relationships with peers on the stability of withdrawn or inhibited behavior during the preschool years (Furman, Rahe, & Hartup, 1979), early childhood (Gazelle & Ladd, 2003), and middle childhood (Booth-LaForce & Oxford, 2008). For example, Gazelle and Ladd followed children's levels of anxious solitude from kindergarten to grade 4. They found that anxious solitude stayed high in children who were excluded by their peers, but decreased in children who did not experience peer exclusion.

There are several mechanisms by which peer interactions may influence children's behavioral inhibition. Mere exposure to peers may lead children to feel more comfortable in social situations, making them act more sociable and positive, and less inhibited. It is also possible that children observe and subsequently model their peers' successful social strategies and behaviors, in turn making them more confident and successful in their own peer interactions, and subsequently less inhibited when they encounter novel social situations. Finally, peer interactions provide a context for learning social scripts and practising social problem-solving skills that facilitate later interactions.

One context in which children have the opportunity to repeatedly interact with peers, beginning at a young age, is childcare or non-maternal caregiving settings. This can include care by a friend, relative, or nanny, care in a family day care home, or care in a childcare center. Research on childcare thus far has primarily examined the influences of the duration of time in childcare, the quality of the caregiver and caregiving context, and the number of simultaneous childcare arrangements (Arcus & McCartney, 1989; Crockenberg & Leerkes, 2005; Fox et al., 2001; Morrissey, 2009), as opposed to focusing specifically on the characteristics of peer interactions. With respect to duration or quantity and its relations to temperament, research has shown that those infants classified as highly distressed and active in response to novelty were more likely to exhibit internalizing symptoms as toddlers if they had spent more hours in non-maternal childcare (Crockenberg & Leerkes, 2005). However, Fox et al. (2001) found more positive effects of childcare in their sample of slightly older children. Their results showed that infants who had been classified as high in negative reactivity at 4 months of age and who were placed in a regular, non-maternal childcare arrangement for more than 10 hr per week during the first 2 years of life were more likely to show a decrease in their inhibition at 4 years of age. More recently, neither Phillips et al. (2009) nor Pluess and Belsky (2009) found significant relations between childcare quantity, children's temperament, and behavioral outcomes in their samples of children seen as toddlers and followed until kindergarten, respectively. One possible explanation for these discrepant results is that temperament was assessed in different ways, including observations (Fox et al., 2001; Phillips et al., 2009), and maternal report using different scales (Crockenberg & Leerkes, 2005; Pluess & Belsky, 2009).

The effects of childcare quality on peer interactions are more consistent. Volling and Feagans (1995) found that toddlers rated as socially fearful by mothers had more positive peer interactions during childcare if the quality of care was high, and fewer positive peer

interactions if the quality was low. Similarly, Pluess and Belsky (2009) reported that children classified as negatively reactive as infants were rated as having more teacher-reported behavior problems at 54 months and in kindergarten if they experienced lower quality childcare. On the other hand, these children were rated as more socially competent if they experienced higher quality childcare. Phillips et al. (2009) also found an interaction between temperament and childcare quality such that the social integration of toddlers in childcare who had been observed to display both more positive and negative reactive temperaments as infants was affected by variation in the quality of care they received, whereas the behavior of their more typical peers was not.

Given that children's behavioral inhibition is often displayed in the face of social interactions, especially as children get older, and experiences with peers play a crucial role in shaping the degree of social reticence over time, it seems important to examine the specific characteristics of children's early peer interactions in the childcare context. However, very little research has been conducted to examine the relations between temperament and children's interactions with peers during childcare (e.g., Galluzzo, Matheson, Moore, & Howes, 1990; NICHD ECCRN, 2001; Phillips, Fox, & Gunnar, 2011). Volling and Feagans (1995), for example, found that socially fearful toddlers had more negative peer interactions, involving aggression, negative vocalizations, and lack of sharing, during care when these were examined concurrently. In other research, associations between children's difficult temperament and their behavior toward peers were examined both in childcare and in the laboratory (NICHD ECCRN, 2001). Researchers did not find any significant relations between temperament assessed when children were 6 months of age and their positive and negative peer play behavior observed during childcare at 24 and 36 months of age. In the studies just described, it is important to note that temperament was examined as a predictor of children's peer relations during care, and the influence of peer relations on temperament over time was not considered. It is still unclear, then, to what degree positive interactions with peers during care may provide a buffer against the negative social outcomes associated with behavioral inhibition during early childhood.

The Present Study

The present study is part of an ongoing, longitudinal examination of the relations between children's experiences in non-maternal childcare and their temperamental characteristics over time. The goal was to determine whether experiences with peers during non-maternal childcare ameliorate or exacerbate the disposition toward negative reactivity identified during infancy that has been found to be related to behavioral inhibition during toddlerhood and wariness during childhood (Fox et al., 2001, 2005; Rothbart & Bates, 2006). We measured negative temperamental reactivity in early infancy prior to placement of the infant in childcare. We sought to examine specific characteristics of children's peer interactions during childcare in order to determine whether it is these experiences or mere exposure to an alternative care setting (which could include different adults, environments, and/or peers) that influences the trajectory of children's temperament over time.

We hypothesized that (1) children who were high in negative reactivity at 4 months of age and who experienced regular childcare up to 24 months of age would show less wariness around unfamiliar peers at 24 and 36 months of age than their age-mates without regular childcare experience; (2) negatively reactive children's positive experiences with peers during childcare at 24 months would be associated with less

wariness and more positive, outgoing behavior with an unfamiliar peer at 24 months of age; (3) negatively reactive children's positive experiences with peers during childcare at 24 months would also predict less wariness and more positive behavior around unfamiliar peers at 36 months of age; and (4) children in the control group (i.e., not negatively reactive as infants) would not show the same positive effects of childcare on their wariness at 24 and 36 months of age.

Method

Participants

Participants were 113 mother–child dyads recruited to participate in a large, ongoing longitudinal study in the Child Development Laboratory at the University of Maryland. Children's ethnicities were as follows: 70 percent White, 9 percent African-American, and 21 percent multi-racial. Mothers of children were well educated (86 percent had graduated college), as were fathers (71 percent had graduated college), and the majority of children came from two-parent families (93 percent).

As part of the larger study, 779 infants were initially screened for motor reactivity and emotional reactivity to novel sights and sounds at four months of age (see Fox et al., 2001; Hane, Fox, Henderson, & Marshall, 2008). The reactivity scores of the first 100 infants screened were used to set the selection criteria as follows: those who scored above this group's mean on negative affect and motor arousal, and below the mean on positive affect, were designated as the negatively reactive group (N = 105). Those who scored above this group's mean on positive affect and motor arousal, and below the mean on negative affect, were designated as the positively reactive group (N = 103). Eighty-three infants who did not meet the criteria for either group were designated as the control group.

Based on the four-month assessment, 291 infants and their parents were invited to continue participation by visiting a laboratory at the university. Of these, 247 participated at 9 months, 234 participated at 24 months, and 227 participated at 36 months.

When infants were 24 months of age, 154 of the mothers reported through telephone interview that their children were currently placed in a regular childcare arrangement (i.e., at least 10 hr per week). Families were then asked to participate in a supplemental portion of the study aimed at examining the effects of childcare. Of these 154 families, eight were no longer living in the area and were thus not able to participate further, and 11 parents declined participation in this portion of the study. Of the remaining 135 children, 69 had childcare providers who consented to onsite observations of the care arrangement. Children who were observed and those who were eligible but not observed were compared, and the results did not reveal any statistically significant differences in terms of family demographics or basic childcare characteristics.

Non-maternal childcare arrangements included the following: care by a relative (11 percent), care by a nanny (18 percent), care in another family's home (23 percent), and care in a day care center (32 percent). Care was provided by females for all but one child, and the ethnicity of caregivers was as follows: White (41 percent), African-American (29 percent), Latino/Hispanic (10 percent), and other (20 percent). About half of caregivers had some college education, whereas 23 percent had a high school degree or less and 36 percent had a four-year college degree or higher. In addition, over half (56 percent) had some formal child development or early childhood education in high school or college.

Childcare Groups. Two subsamples of children who had experienced regular non-maternal childcare were examined and compared in the present study: those designated as negatively reactive at four months of age ('NR childcare group') and those who were not and therefore designated as a control group ('CNT childcare group'; children designated as positively reactive at four months of age plus those who did not meet the criteria for positively or negatively reactive at four months of age).

The NR childcare group consisted of 29 children (13 females) who were observed in their regular care setting and had data from both 24-month ($M = 25.38$, $SD = 1.53$) and 36-month ($M = 36.84$, $SD = .94$) laboratory assessment points. By 24 months of age, children in this group had received an average of 2698.00 hr of non-maternal childcare ($SD = 1343.65$, $Range = 432\text{--}5576$). The CNT childcare group consisted of 32 children (14 females) who were observed in their regular care setting and who had data from both 24-month ($M = 26.14$, $SD = 2.39$) and 36-month ($M = 36.90$, $SD = 1.65$) laboratory assessment points. By 24 months of age, children in this group had received an average of 2331.93 hr of non-maternal childcare ($SD = 1079.42$, $Range = 126\text{--}4411$).

No Childcare Groups. Two groups of children who had experienced *minimal* non-maternal childcare (less than 100 hr in total of non-maternal childcare) and who were *not placed* in a regular childcare arrangement at 24 months of age were also examined. These included 23 children (19 females) who were classified as negatively reactive as infants and who had data from both 24-month ($M = 25.07$, $SD = 1.48$) and 36-month ($M = 37.18$, $SD = 1.93$) assessment points ('NR no childcare group'). The second group consisted of 29 children (14 females) who were *not classified* as negatively reactive as infants (i.e., either positively reactive or control) and who had data from both 24-month ($M = 25.07$, $SD = 1.48$) and 36-month ($M = 37.18$, $SD = 1.93$) assessment points ('CNT no childcare group').

Summary of Participants. The 113 children who participated in the present study were divided into four groups: NR childcare group ($N = 29$), CNT childcare group ($N = 32$), NR no childcare group ($N = 23$), and CNT no childcare group ($N = 29$).

Procedure

Children initially recruited and selected at four months of age were invited to participate in the larger, ongoing study (Hane, Fox et al., 2008). This involved a home visit and a laboratory visit at 9 months, and two laboratory visits each at 24 and 36 months. Parents were also contacted by phone and interviewed about their child's care history at 9, 16, and 24 months of age.

At 24 months, children who had received regular childcare participated in a supplemental portion of the study. Informed consent was first obtained from parents and then from the childcare provider (if the child was in multiple arrangements, consent was obtained from the provider with whom the child spent the majority of his or her time each week). Children were subsequently observed on a typical day in their childcare arrangement during the age window for data collection (24–35 months).

Childcare Observation. Selected children were observed on a typical day in their primary non-maternal childcare setting by two trained experimenters. One experimenter observed children's behaviors and interactions for two 44-min observation

periods in the morning and one 44-min observation period in the afternoon. The second experimenter rated the childcare environment and interviewed the childcare provider. The childcare provider (and center director when relevant) received monetary compensation for his or her participation in the study.

Laboratory Observation. During their visit to the laboratory at 24 months of age, children were observed interacting with an unfamiliar, age and gender-matched peer in a playroom for 10 min. At 36 months of age, children again visited the laboratory and were observed interacting with an unfamiliar, age and gender-matched peer in a playroom for 10 min. Families of children were compensated for their participation at each time point.

Measures

Childcare History. Mothers completed the child care history questionnaire, which assesses the frequency and type of non-maternal childcare children have received up to a particular age, when their children were 9, 16, and 24 months of age. For the purposes of the present study, only cumulative childcare history up to and including 24 months of age was used. Specifically, the total number of hours children were in any type of childcare was calculated from maternal reports. As mentioned previously, children who had experienced more than 100 cumulative hours of childcare were designated as a childcare group and children who had experienced less than 100 hr of childcare were designated as a no childcare group.

Child Behavior and Experiences during Childcare. In order to assess children's behavior and experiences with peers during childcare, a modified version of the observational ratings of the caregiver environment (M-ORCE; NICHD ECCRN, 1996, 2002; Phillips & Ahern, 2004) was administered. The observational ratings of caregiver environment (ORCE) assesses both the quantity and the quality of children's interactions in home and out-of-home care environments with caregivers other than their mother (e.g., father, relative, nanny, day care provider). For the purposes of the supplemental study, some ORCE scales were eliminated and others were created in order to capture children's interactions with the caregiver, peers, and the overall climate during care (see Kryzer, Kovan, Phillips, Domagall, & Gunnar, 2007, for a full description of the differences between the ORCE and the M-ORCE).¹

In the present study, we chose to examine those variables that we expected to be related to children's wariness. These included the child's positive mood and vigilant/anxious mood, engagement in activities (coded as the percentage of time the child spent engaged in activity), negative peer interactions (coded as the percentage of time the child experienced negative peer interactions), and peer integration (coded as the degree of integration with peers). A full description of the definitions and codes for these variables are presented in Table 1.

The instrument takes 44 min to complete and consists of four observation cycles: three 10-min cycles during which behavioral observations of the child are made and a final 10-min cycle during which qualitative ratings of the childcare setting are made. Independent coders rated children's behavior on rating scales, where applicable, and behavioral frequency scores were calculated by summing the number of instances in a given cycle across all cycles. Coders also recorded the number of peers present during the observation period.

Table 1. Behavioral Codes Assessing Children’s Behaviors during Non-maternal Childcare at 24 Months of Age

Code	Scale
Positive mood	<p>1 = not at all characteristic; this child does not exhibit any positive affect or give any evidence of feeling good.</p> <p>2 = minimally characteristic; the child may show brief instance of positive affect, or the child may be characteristically pleasant, content, or satisfied throughout the observation period, without exhibiting any strong indicators of positive mood.</p> <p>3 = moderately characteristic; the child exhibits several instances of strong positive affect (expresses enthusiasm, playfulness, smiling, and laughter) and is often pleasant.</p> <p>4 = highly characteristic; the child displays multiple instances of strong positive affect and is characteristically ‘pleasant’ for most of the remainder of the observation period. For this rating, a child can have no episodes of strong distress.</p>
Vigilant/anxious mood	<p>1 = not at all characteristic; there are no signs of the child being vigilant or anxious during the observation period.</p> <p>2 = minimally characteristic; the child displays one or two brief or weak instances of vigilance/anxiety, or one more moderate instance, during the observation period.</p> <p>3 = moderately characteristic; the child displays two or more moderate instances, or three or more weak or brief instances, of a vigilant/anxious mood or is minimally vigilant/anxious throughout much of the observation period.</p> <p>4 = highly characteristic; the child displays several instances of strong vigilant/anxious behavior during the observation period and appears to be rarely calm and at ease in his or her environment.</p>
Peer integration	<p>1 = unintegrated/not involved in social interaction; child is a bystander.</p> <p>2 = low level of positive/neutral social integration; child is part of the mix but not especially integral to what is going on.</p> <p>3 = high level of positive/neutral integration; child is clearly part of the social action and there is clear evidence that she or he is important for the continuation of the interaction.</p>
Negative peer interactions	<p>— The frequency of negative peer interactions was recorded and then a percentage score was calculated for the amount of time negative peer interactions are experienced over the course of the observation period.</p> <p>— A negative interaction, or aggressive act, involves a behavior that is intended to hurt or harm another child; the intent therefore needs to be negative to be coded as a negative interaction. An aggressive act can present itself as relational aggression, physical aggression, or verbal aggression.</p>
Engagement in activity	<p>— The frequency of time spent unengaged in activity was recorded and subtracted from the total time of observation. A percentage score was then calculated for the amount of time the child was engaged in activity over the course of the observation period.</p> <p>— Unengaged behavior is coded when the child is wandering, unoccupied, not participating in or not paying attention to anything or anyone.</p>

Coding was completed by a master coder plus three additional coders who were blind to the children's temperamental status. The additional coders were trained by the master coder through discussion and practice on videotapes. The additional coders then accompanied the master coder to practise coding sites where they coded until a reliability of .80 (Cohen's kappa) was achieved on all scales. Throughout data collection, reliability was checked approximately every sixth session by having the coder and the master coder both independently code the same data and then compare their results. On all behavioral scales used in the present study, coders maintained a Cohen's kappa of .80 with the master coder.

Child Behavior with an Unfamiliar Peer in the Laboratory. At both 24 and 36 months of age, children's behavior while interacting with an unfamiliar peer was assessed during a free-play interaction. At each visit, the target child was paired with an unfamiliar peer of similar age recruited from the community and they were instructed to play together in a laboratory playroom for approximately 10 min. The target child's behavior was videotaped from behind one-way mirrors and subsequently coded for specific behaviors by independent coders. A global score, reflecting the coders' overall impression of the variable across all five coding segments, was given for each variable on a scale from 1 to 7. This global score reflected the coders' overall impression of the variable across all five coding segments. The behaviors included social interest (*1 = lack of acknowledgement/awareness of peer, lack of reciprocity, ignores initiations of peer; 7 = total engagement with peer, initiates interactions, imitates peer, moves close to peer, initiates physical contact with peer*), positive affect (*1 = complete absence of positive affect to 7 = continued expressions of intense joy, laughing, smiling, yelling, jumping*), negative affect (*1 = complete absence of negative affect to 7 = continued displays of intense negative affect, crying, screaming, tantrums*), activity level (*1 = stays in one place, slow movements to 7 = moves quickly and intensely, engages in physical play, runs/skips/throws ball for pleasure of moving, continuous motion*), aggression (*1 = complete absence of aggression to 7 = hitting, kicking, biting*), wariness (*1 = quickly and easily moves around room, engaging with toys to 7 = clearly uneasy, sucks thumb, stands in one place, watching but not acting, hovers, frequently looks over to mom*), and unfocused behavior (*1 = very focused on one activity at a time to 7 = spends very little time on one activity, lacks engagement with toys, aimless, wandering, staring into space*). Reliability was calculated on 16 percent of the sample at 24 months and yielded intra-class correlations as follows: social interest, .74; positive affect, .74; negative affect, .83; activity level, .77; aggression, .87; wariness, .75; and unfocused behavior, .68. Reliability was calculated on 23 percent of the sample at 36 months and yielded intra-class correlations as follows: social interest, .85; positive affect, .85; negative affect, .89; activity level, .86; aggression, .95; wariness, .76; and unfocused behavior, .83.

For data reduction purposes the inter-correlations between global behavioral scores were examined at 24 and 36 months for the full sample (Table 2). Composite scores were created for each time point based on the significant inter-correlations by standardizing the behavioral scores and averaging related scores. This yielded three composites, which were created for both age groups: social engagement (social interest, positive affect, and activity level), dysregulation (aggression and negative affect), and wariness (unfocused behavior and wariness). These same composites were also created for the CNT group in order to allow for identical analyses to be run.

Table 2. Pearson Correlations for Behavioral Codes from Laboratory Free-play Task with an Unfamiliar Peer at 24 and 36 Months of Age

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. 24 months social interest	—													
2. 24 months positive affect	.51*	—												
3. 24 months activity level	.50*	.57**	—											
4. 24 months aggression	.06	.03	.15*	—										
5. 24 months negative affect	-.15*	-.08	-.14*	.38**	—									
6. 24 months unfocused	-.27**	-.19**	-.33**	-.04	.18**	—								
7. 24 months wariness	-.39**	-.41**	-.41**	-.14*	.05	.50**	—							
8. 36 months social interest	.06	-.01	.00	.04	.05	-.10	-.08	—						
9. 36 months positive affect	.06	.12	.10	.11	.11	-.13	-.13	.46**	—					
10. 36 months activity level	.11	.10	.15	.09	.05	-.11	-.08	.32**	.64**	—				
11. 36 months aggression	-.03	-.00	.08	.13	.13	-.09	-.11	.00	.02	.04	—			
12. 36 months negative affect	.02	.06	.08	.17*	.10	-.11	-.17*	-.02	.02	.07	.47**	—		
13. 36 months unfocused	-.07	.09	.00	-.04	.04	.18*	.03	-.23**	-.26**	-.20**	.06	.22**	—	
14. 36 months wariness	-.06	-.04	-.02	-.08	-.02	.12	-.01	-.18**	-.30**	-.22**	.00	.04	.49**	—

Note: * $p < .05$, ** $p < .01$, *** $p < .10$.

Results

Overview of Analyses

Firstly, in order to examine the contributions of general exposure to childcare, comparisons were made between children in the NR childcare group and the NR no childcare group on behaviors with an unfamiliar peer in the lab at both 24 and 36 months. Secondly, in order to examine the relations between children's experiences during childcare and their behavior toward an unfamiliar peer, the relations between variables measured during childcare and those measured during the laboratory interactions with an unfamiliar peer at 24 months for the childcare groups only were examined. Thirdly, behaviors during the laboratory interaction at 36 months were predicted from variables measured during childcare at 24 months (for the childcare groups only), controlling for 24-month lab behavior.

Finally, in order to test the hypothesis that the relations between peer experiences in childcare at 24 months of age and behavior toward an unfamiliar peer in the lab at 36 months of age would be stronger for children classified as negatively reactive during infancy (NR childcare group) than those who were not (CNT childcare group), a series of comprehensive structural equation models (SEMs) were fit to the data. Furthermore, similar SEM comparison analyses were conducted in order to determine whether relations between 24-month laboratory measures of social engagement and dysregulation and wariness at 36 months were different for children in the NR childcare and NR no childcare groups.

Preliminary Analyses

Initial comparisons using a chi-square test showed that there were no significant differences between the number of children in the four temperament by childcare groups, $\chi^2(1) = .97$, NS. In addition, comparisons of the NR childcare group to the CNT childcare group, as well as the NR no childcare group to the CNT no childcare group, revealed no significant differences in the total number of hours of care received by 24 months of age [$t(64) = -.89$, NS and $t(66) = -1.42$, NS, respectively]. Finally, comparisons of the NR childcare group with the CNT childcare group revealed no significant differences in the average number of peers in their care setting [$t(64) = -.89$, NS]. For the NR childcare group, there was an average of 6.06 children present during their observed care session ($SD = 4.23$, $Range = 1.25-14.75$). For the CNT childcare group, there was an average of 6.30 children present during their observed care session ($SD = 4.07$, $Range = 1.17-16.83$).

NR Group Comparisons: Behavior toward an Unfamiliar Peer at 24 and 36 Months in the Childcare Group and No Childcare Group

In order to test the first hypothesis that children who were temperamentally high in negative reactivity at 4 months of age and who experienced regular childcare up to 24 months of age would show less wariness around unfamiliar peers at 24 and 36 months of age than their age-mates without regular childcare experience, children's behavior toward unfamiliar peers in the laboratory in the NR childcare group and the NR no childcare group were compared using a multivariate analysis of variance (MANOVA). Behavior composites (social engagement, dysregulation, and wariness) were examined

Table 3. Descriptive Statistics for Laboratory Peer Interaction Composite Variables for All Groups

Variable	Negative reactive		Control	
	Childcare group	No childcare group	Childcare group	No childcare group
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
24 months social engagement	-.02 (.86)	-.11 (.73)	-.15 (.94)	.04 (.84)
24 months wariness	-.16 (.81)	.26 (.87)	.19 (1.03)	.15 (.76)
24 months dysregulation	.42 (1.09)	-.22 (.67)	.21 (.70)	.11 (.93)
36 months social engagement	-.03 (.73)	-.39 (.62)	.12 (.85)	-.00 (.83)
36 months wariness	-.15 (.73)	.09 (.58)	-.09 (.93)	-.16 (.87)
36 months dysregulation	.12 (1.02)	-.22 (.44)	.10 (1.02)	.18 (.20)

at 24 and 36 months of age. Results showed that children in the NR childcare group scored significantly higher on dysregulation at 24 months ($F = 3.96, p < .05$), but not at 36 months ($F = 1.51, NS$). There were no significant group differences on wariness at 24 months ($F = 2.52, NS$) or 36 months of age ($F = 2.01, NS$), nor on social engagement at 24 months ($F = .46, NS$) or 36 months of age ($F = 1.21, NS$). Descriptive statistics are presented in Table 3.

CNT Group Comparisons: Behavior toward an Unfamiliar Peer at 24 and 36 Months in the Childcare Group and the No Childcare Group

Children's behavior toward unfamiliar peers in the laboratory in the CNT childcare group and the CNT no childcare group were compared using a MANOVA. Results showed no significant group differences on wariness, social engagement, or dysregulation at 24 or 36 months of age. Descriptive statistics are presented in Table 3.

NR Childcare Group: Concurrent Associations at 24 Months of Age

In order to test the second hypothesis that experiences during childcare at 24 months of age would be related to behavior toward an unfamiliar peer at 24 months of age, the relations between these variables were examined for the NR childcare group using Pearson correlations (Table 4). Children's positive mood in childcare was significantly and negatively correlated with their degree of wariness toward an unfamiliar peer in the laboratory ($p < .01$). Engagement in activities during childcare was significantly and negatively correlated with their degree of social engagement toward an unfamiliar peer in the laboratory ($p < .05$).

CNT Group: Concurrent Associations at 24 Months of Age in the Childcare Group

The relations between children's behavior and experiences during childcare and their behavior toward an unfamiliar peer in the laboratory, both at 24 months of age, were

Table 4. Pearson Correlations for Variables Measured at 24 Months of Age during CC and in the LB for the NR Childcare Group and the CNT Childcare Group

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. CC positive mood	—							
2. CC vigilant/anxious mood	.16	—						
3. CC engagement in activities	.37*	-.28	—					
4. CC peer integration	-.02	.02	.46*	—				
5. CC negative peer interactions	-.05	.16	-.50**	-.84**	—			
6. LB wariness	-.51**	-.05	.25	-.05	-.10	—		
7. LB social engagement	.30	.03	-.41*	-.08	.28	-.49**	—	
8. LB dysregulation	.15	.13	-.08	-.31	.19	-.08	-.01	—

Notes: Results for the NR childcare group are below the diagonal, results for the CNT childcare group are above the diagonal. NR = negative reactive; CNT = control; CC = childcare; LB = laboratory.
* $p < .05$, ** $p < .01$, *** $p < .10$.

examined for the CNT childcare group using Pearson correlations (Table 4) and revealed no significant correlations.

NR Childcare Group: Longitudinal Associations

The prediction of children's behavior toward an unfamiliar peer in the laboratory at 36 months from their behavior and experiences during childcare at 24 months was examined for the NR childcare group using hierarchical regression analyses. Analyses were run separately for each of the five predictor variables (peer integration, negative peer interactions, engagement in activity, positive mood, vigilant/anxious mood) in order to preserve power in the sample. The analyses were initially run with child gender, number of hours in care, and the relevant laboratory behavior composite at 24 months included as control variables, but because gender was not a significant predictor in any analysis, nor was there any significant childcare by gender interaction, gender is not included in the analyses presented below.

Control variables and predictor variables were entered into separate blocks in order to allow for the examination of the individual contributions of predictor variables. For all sets of analyses, then, the relevant laboratory behavior composite at 24 months (wariness, dysregulation, or social engagement) was entered into the first block in order to control for children's initial behavior along with the number of hours in care, and the childcare predictor variable was entered into the second block.

Effect sizes were calculated using Cohen's f^2 , an appropriate measure for use with multiple regression, where the effect size for hierarchical multiple regression is defined as the difference in r^2 between steps in the regression model divided by 1 minus r^2 for the final step (Cohen, 1988).

Predictors of Wariness in the Laboratory at 36 Months. Peer integration ($t = -3.07$, $p < .01$) and fewer negative peer interactions in childcare at 24 months ($t = 3.34$, $p < .01$) both significantly predicted less wariness in the laboratory one year later at 36 months, after controlling for wariness in the laboratory at 24 months and number of hours in care. The effect sizes for peer integration ($f^2 = .41$) and negative peer interactions ($f^2 = .48$) were both large. These results are summarized in Table 5.

Predictors of Social Engagement in the Laboratory at 36 Months. None of the childcare variables examined significantly predicted social engagement in the laboratory at 36 months of age.

Predictors of Dysregulation in the Laboratory at 36 Months. Children's vigilant/anxious mood significantly and positively predicted dysregulation in the laboratory at 36 months ($t = 5.32$, $p < .001$), over and above the control variables. The effect size for vigilant/anxious mood ($f^2 = 1.23$) was large. These results are summarized in Table 6.

CNT Childcare Group: Longitudinal Associations

The prediction of children's behavior toward an unfamiliar peer in the laboratory at 36 months from their behavior and experiences during childcare at 24 months was examined for the CNT childcare group using hierarchical regression analyses and procedures identical to those described in previous sections.

Table 5. Regression Analysis Predicting Children's Wariness in the Laboratory at 36 Months of Age from Childcare Variables Measured at 24 Months of Age in the NR Group

Variable	R^2	ΔR^2	B	t
Control variables	.05			
LB wariness at 24 months			.25	1.12
Total hours in care			.18	.81
Predictor variable				
CC peer integration	.32	.28	-.53	-3.07**
CC negative peer interactions	.36	.31	.58	3.34**
CC vigilant/anxious mood	.18	.12	-.53	1.84*

Notes: NR = negative reactive; LB = laboratory; CC = childcare.
* $p < .10$, ** $p < .01$.

Table 6. Regression Analysis Predicting Children's Dysregulation at 36 Months of Age from Childcare Variables Measured at 24 Months of Age in the Negative Reactive Group

Variable	R^2	ΔR^2	B	t
Control variables	.12			
Laboratory dysregulation at 24 months			.31	1.57
Total hours in care			.26	1.31
Predictor variable				
Vigilant/anxious mood	.61	.49	.71	5.32*

Note: * $p < .01$.

Predictors of Wariness in the Laboratory at 36 Months. Children's positive mood during childcare at 24 months ($t = -2.93$, $p < .01$) significantly and negatively predicted wariness in the laboratory at 36 months, whereas children's vigilant/anxious mood during childcare at 24 months ($t = 4.32$, $p < .001$) significantly and positively predicted wariness at 36 months after controlling for wariness in the laboratory at 24 months and number of hours in care. The effect sizes for positive mood ($f^2 = .38$) and for vigilant/anxious mood ($f^2 = .71$) were both large. These results are summarized in Table 7.

Predictors of Social Engagement in the Laboratory at 36 Months. None of the childcare variables at 24 months significantly predicted social engagement in the laboratory at 36 months of age.

Predictors of Dysregulation in the Laboratory at 36 Months. None of the childcare variables at 24 months significantly predicted dysregulation in the laboratory at 36 months of age.

Table 7. Regression Analysis Predicting Children's Wariness at 36 Months of Age from Childcare Variables Measured at 24 Months of Age in the Childcare Group

Variable	R^2	ΔR^2	B	t
Control variables	.09			
Laboratory wariness at 24 months			.30	1.50
Total hours in care			.03	.16
Predictor variable				
Positive mood	.33	.24	.71	-2.93*
Vigilant/anxious mood	.50	.40	.67	4.32*

Note: * $p < .01$.

Between-group Comparisons of the Relations between Experiences with Peers during Childcare at 24 Months of Age and Behavior toward an Unfamiliar Peer in the Laboratory at 36 Months of Age for the NR Childcare and CNT Childcare Groups

In order to test the final hypothesis that the relations between children's experiences during childcare and their behavior toward an unfamiliar peer at 36 months of age would be stronger for children classified as negatively reactive as infants, comprehensive SEM models were fit with the statistical program Mplus (version 5.21; Muthén & Muthén, 2007). For each of the two significant childcare predictor variables (negative peer interactions and peer integration), an initial baseline model was fit in which relations between the predictor, covariate, and outcome variables were estimated, but held constant across the two groups (NR childcare group and CNT childcare group). In a subsequent model, the relation between the predictor variable and the outcome variable was allowed to vary by group, thus providing a test of the effect of temperamental reactivity group on these relations.

The model estimating separate contributions of children's negative peer interactions during childcare at 24 months of age to their wary behavior toward an unfamiliar peer at 36 months of age for the two groups (NR childcare group and CNT childcare group), after accounting for wariness at 24 months of age and total number of hours in care, displayed good fit to the data [comparative fit index (CFI) = 1.00, root mean square of approximation (RMSEA) = 0.00, Akaike information criterion (AIC) = 1600.06, Bayesian information criterion (BIC) = -1617.57, $\chi^2(2) = 1.43$, $p = .49$; Figure 1]. As expected, children's negative peer interactions during childcare at 24 months significantly predicted their wary behavior toward an unfamiliar peer at 36 months for the NR childcare group ($t = 3.47$, $p < .01$) but not for the CNT childcare group ($t = -.04$, NS). Furthermore, this model indicated better fit across all indices than the baseline model that did not differentiate between the two groups [CFI = 0.00, RMSEA = 0.24, AIC = 1607.10, BIC = 1618.05, $\chi^2(5) = 14.47$, $p < .01$]. A chi-square difference test between the two models was also significant ($p < .01$).

The model estimating the separate contributions of children's peer integration during childcare at 24 months of age to their wary behavior toward an unfamiliar peer at 36 months of age for the two groups, after accounting for wariness at 24 months of age and total number of hours in care, displayed good fit to the data [CFI = 1.00,

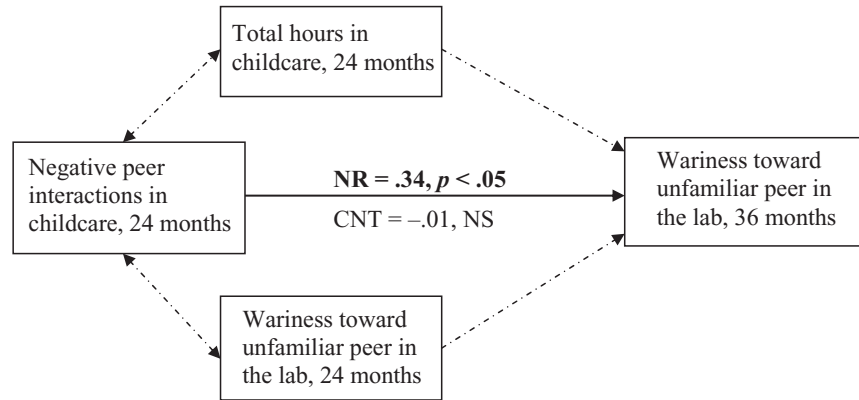


Figure 1. Model Predicting Wariness at 36 Months of Age from Negative Peer Interactions during Childcare at 24 Months of Age, Controlling for Total Hours in Care at 24 Months and Wariness at 24 Months.

Notes: Bolded path is free to vary by group. Dashed paths are held constant. Standardized path values shown for negative reactive childcare group (NR) and control childcare group (CNT).

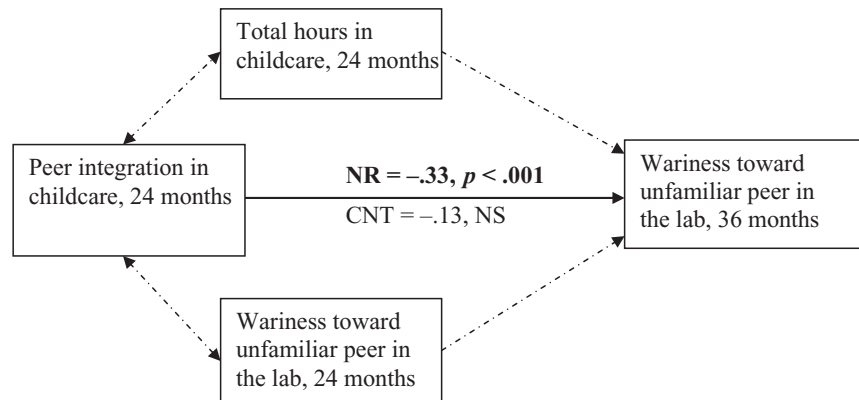


Figure 2. Model Predicting Wariness at 36 Months of Age from Peer Integration during Childcare at 24 Months of Age, Controlling for Total Hours in Care at 24 Months, and Wariness at 24 Months.

Notes: Bolded path is free to vary by group. Dashed paths are held constant. Standardized path values shown for negative reactive childcare group (NR) and control childcare group (CNT).

RMSEA = 0.00, AIC = 1602.16, BIC = 1619.67, $\chi^2(2) = 0.86, p = .65$; Figure 2]. As expected, children's peer integration during childcare at 24 months significantly predicted their wary behavior toward an unfamiliar peer at 36 months for the NR childcare group ($t = -3.22, p < .01$) but not for the CNT childcare group ($t = -.66, NS$). Furthermore, this model indicated better fit across all indices than the comparable, baseline model that did not differentiate between the two groups [CFI = 0.00, RMSEA = 0.22, AIC = -1608.51, BIC = 1619.46, $\chi^2(5) = 13.21, p < .05$]. A chi-square difference test between the two models was also significant ($p < .01$).

Between-group Comparisons of the Relations between Behavior toward an Unfamiliar Peer in the Laboratory at 24 Months and Behavior toward an Unfamiliar Peer in the Laboratory at 36 Months of Age for the NR Childcare and NR No Childcare Groups

To lend further support to the final hypothesis regarding the specific influence of peers during childcare on children's wariness, comprehensive SEM models were also fit comparing the NR childcare and NR no childcare groups on their behaviors toward an unfamiliar peer in the laboratory. Similar to the SEM analyses described above, for each of the two laboratory predictor variables (social engagement and dysregulation), an initial baseline model was fit in which relations between the predictor, covariate, and outcome variables were estimated, but held constant across the two groups (NR childcare and NR no childcare). In a subsequent model, the relation between the predictor variable and the outcome variable was allowed to vary by group, thus providing a test of the effect of the childcare vs. no childcare groups on these relations within the NR subsample.

The model estimating separate contributions of children's social engagement at 24 months of age to their wary behavior toward an unfamiliar peer at 36 months of age for the two groups (NR childcare group and NR no childcare group), after accounting for wariness at 24 months of age, displayed good fit to the data [CFI = 1.00, RMSEA = 0.00, AIC = 466.85, BIC = 488.09, $\chi^2(7) = 5.52$, $p = .59$]. However, children's social engagement measured in the laboratory did not predict wariness at 36 months measured in the laboratory in either group ($ps > .30$). Furthermore, this model did not indicate better fit than the baseline model that did not differentiate between the two groups [CFI = 1.00, RMSEA = 0.00, AIC = 464.87, BIC = 484.19, $\chi^2(5) = 5.55$, $p = .69$].

The model estimating the separate contributions of children's dysregulation at 24 months of age to their wary behavior toward an unfamiliar peer at 36 months of age for the two groups (NR childcare and NR no childcare), after accounting for wariness at 24 months of age, displayed poor fit to the data [CFI = 0.23, RMSEA = 0.17, AIC = 473.33, BIC = 494.58, $\chi^2(7) = 12.00$, $p = .10$]. Children's dysregulation predicted wariness at 36 months in the no childcare group ($t = -1.96$, $p = .05$), but not in the NR childcare group ($t = -1.15$, $p = .25$). Furthermore, this model did not indicate better fit than the comparable, baseline model that did not differentiate between the two groups [CFI = 0.21, RMSEA = 0.16, AIC = 472.49, BIC = 491.80, $\chi^2(8) = 13.16$, $p = .10$].

Discussion

This study investigated the influence of children's temperament and their experiences in non-maternal childcare on their behaviors with an unfamiliar peer. The first goal of the present study was to compare negatively reactive children who had experienced regular childcare up to 24 months of age with those who had *not* in order to determine whether these two groups of children differed in their social behaviors toward unfamiliar peers during laboratory interactions at 24 and 36 months of age. Contrary to expectations, children's observed levels of wariness during interactions with an unfamiliar peer at 24 or 36 months of age were not associated with general exposure to child care (being in childcare vs. not). However, negatively reactive children in the childcare group, as compared with those with minimal or no childcare experience, were rated as significantly more dysregulated at 24 months. Given that the current

measure of dysregulation captures both aggressive behavior and negative affect, this finding is somewhat consistent with previous research linking higher amounts of non-maternal childcare to more externalizing and aggressive behavior (Bates et al., 1994; Belsky et al., 2007; Vandell & Corasaniti, 1990). The present study extends these previous studies to a sample of children who were classified as negatively reactive in infancy and who are thus at risk for behavioral inhibition. By 36 months, however, these differences in dysregulation for the negatively reactive children who had and had not experienced regular childcare were no longer significant. An examination of children's mean levels of behavior elucidates this finding in that negatively reactive children in the childcare group had lower levels of aggression at 36 months, whereas negatively reactive children in the no childcare group maintained their already low levels of aggression across the two assessment points. It seems that in time, children may learn more positive regulation strategies or behaviors during care, thereby decreasing the levels of aggressive or dysregulated behaviors they initially display in the care setting.

With respect to wariness, we failed to find a significant difference between the negatively reactive childcare and 'no childcare' groups at either age. It seems that mere exposure to an alternative caregiver and/or environment does not directly influence wariness. However, children's experiences *within* their childcare settings were associated with observed wariness. Specifically, consistent with expectations, negatively reactive children who displayed a more positive mood and who were more engaged with peers during childcare were also less wary around unfamiliar peers in the laboratory, when these behaviors were measured concurrently at 24 months of age. In addition, children who spent more time engaged in activities during childcare were more socially engaged around unfamiliar peers in the laboratory. One possibility is that children who had more positive social experiences during childcare consequently felt more comfortable around peers and, in turn, were less wary or anxious and more engaged when presented with a novel social situation like that experienced in our laboratory. Another possibility is that children who were less wary or more engaged during the laboratory interaction had generally become less wary or inhibited since infancy, through positive interactions with parents or peers (regardless of care setting), and therefore were more likely to enjoy play activities with both familiar and unfamiliar peers in the present study. According to the first hypothesis, children's experiences during childcare are contributing to a decline in their inhibited tendencies. According to the second hypothesis, childcare experience does not have an effect on these tendencies. Rather, social experiences from multiple settings are contributing to reduced inhibition, which is then displayed both in childcare and in the lab interactions with an unfamiliar peer.

In order to test our hypothesis that peer interactions during childcare help to ameliorate some of the negative aspects of a wary or inhibited temperament, we examined relations between peer experiences in childcare at 24 months and behaviors toward an unfamiliar peer in the laboratory at 36 months, controlling for children's behaviors toward an unfamiliar peer at 24 months. As expected, children who had more positive peer experiences during childcare indeed showed lower levels of wariness in the laboratory one year later. Specifically, we found that greater integration with peers and fewer negative peer interactions predicted lower levels of wariness at 36 months of age in children who had been identified as negatively reactive infants. These results are consistent with those of Phillips et al. (2009), using the same sample, in highlighting the fact that what is important for these children is not simply receiving non-maternal childcare but the quality of their experiences with peers while in childcare. In addition,

we found that negatively reactive children who were rated higher on vigilant and anxious mood in childcare at 24 months were significantly more likely to be wary and dysregulated at 36 months of age in the laboratory assessment. These results suggest that individual differences in children's emotionality also play a role in the continuity of their wariness or inhibition over time.

An examination of the control group of children showed that both children's positive mood and vigilant/anxious mood at 24 months of age were significantly related to their wariness in the laboratory at 36 months of age in that children who were more positive and less anxious/vigilant were also less wary. Regardless of early temperament, children's mood likely has an influence on their social relations during care, such that peers may be more apt to approach and engage in interactions with more happy and less anxious children. These positive interactions, over time, have an effect on children's wariness when they are older, even in a group of children who were not at risk for behavioral inhibition.

One final question addressed in the present study concerns specificity: are the effects of childcare and experiences with peers during care specific to children with a particular temperamental style, or do they impact all children equally? To answer this question we repeated all analyses on a control group consisting of children who, as infants, did not display a negative reactive temperamental style. As expected, there were no significant relations between the control children's behavior during their laboratory interaction with an unfamiliar peer at either 24 or 36 months and their experiences as two-year-olds with peers in childcare. An examination of a comprehensive SEM model in which the relations between childcare variables measured at 24 months and laboratory variables measured at 36 months were free to vary by temperamental reactivity group further supported the hypothesis that these associations would be significantly stronger for negatively reactive children as compared with control children in childcare. Furthermore, a second set of SEM analyses comparing negative reactive children in childcare with those who did not receive care revealed no significant relations between children's social behaviors in the laboratory at 24 and 36 months, nor any significant group differences in social behavior measured in the laboratory. These results lend further support to the idea that it is not within-child changes in behaviors or temperament that lead to decreases in wariness at 36 months, such as those measured in the laboratory. Instead, it seems that children's interactions with peers, which occurred within the context of non-maternal care in the current study, are working to temper wary behavior typical of children characterized as negatively reactive during infancy.

Limitations and Future Directions

It is important to note that the sample in the present study was small, which limited the complexity of the models that could be examined. However, the effect sizes for the regression models were substantial despite the size of the sample, suggesting that the relations between children's peer experiences during childcare at 24 months and their behavioral outcomes with an unfamiliar peer at 36 months are meaningful.

It is also worth noting that children's experiences in non-maternal childcare were examined up until 24 months of age in the present study. Many of these children continued to receive care, and other children in the broader sample who had not previously received care began to do so as they entered the preschool years. Thus, future research should consider childcare experiences across the entire early childhood

years as predictors of children's wariness at later ages, including during the early school years when all children begin to engage in social interactions with a peer group on a daily basis. Furthermore, children's peer interactions become more complex as they begin to form friendships and navigate the peer group at school. The positive or negative experiences that they have during childcare may influence the expectations they have for these relationships. Non-maternal childcare arrangements examined in the present study included a variety of situations, including home-based and center-based care. It would be valuable for researchers to examine context or type of arrangement as a potential moderator of the effects of peer interactions on children's behavior. The caregivers' or teachers' role in fostering positive social interactions in child care, especially as it may differentially affect children with differing temperaments, also warrants careful study (see Phillips et al., 2011). Finally, the peer experiences of children who were cared for by their mothers were not examined in the present study. It is possible that interactions with siblings or other children cared for by mothers may impact children's wariness over time. Furthermore, children who do not receive non-maternal care may have interactions with peers that have an important impact on their temperament over time. Research is needed to examine these possibilities.

Conclusion

Our findings are the first to highlight the influence of specific experiences with peers during non-maternal childcare, including their level of integration and frequency of positive interactions, on young children's wariness in the face of novel social interactions, and the specificity of these influences to children classified as negatively reactive during infancy. It is not so much the experience of receiving childcare or not that influences children's wariness during early childhood, but instead it is the social experiences within the childcare setting that inform our understanding of why some children persist in their wary or inhibited tendencies with age whereas others do not. These findings have important implications for childcare providers as they emphasize the value of organized, integrated peer activities and supporting positive peer interactions within the childcare environment, particularly for those children whose temperamental style may make them more sensitive to novelty in their surroundings or experiences.

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Note

1. All children present during the childcare arrangement other than the target child were considered peers. Siblings and other relatives of the target child could be present during certain childcare arrangements and therefore would be considered peers for the purposes of the present study. However, these types of children were present very rarely.