Published in final edited form as:

Child Maltreat. 2010 February ; 15(1): 64–75. doi:10.1177/1077559509337891.

Indiscriminate Friendliness in Maltreated Foster Children

Katherine C. Pears,

Oregon Social Learning Center and Center for Research to Practice

Jacqueline Bruce,

Oregon Social Learning Center and Center for Research to Practice

Philip A. Fisher, and

Oregon Social Learning Center and Center for Research to Practice

Hyoun K. Kim

Oregon Social Learning Center

Abstract

Indiscriminate friendliness is well documented in children adopted internationally following institutional rearing but is less studied in maltreated foster children. Precursors and correlates of indiscriminate friendliness were examined in 93 preschool-aged maltreated children residing in foster care and 60 age-matched, nonmaltreated children living with their biological parents. Measures included parent reports, official case record data, and standardized laboratory assessments. Foster children exhibited higher levels of indiscriminate friendliness than nonmaltreated children. Inhibitory control was negatively associated with indiscriminate friendliness even after controlling for age and general cognitive ability. Additionally, the foster children who had experienced a greater number of foster caregivers had poorer inhibitory control, which was in turn associated with greater indiscriminate friendliness. The results indicate a greater prevalence of indiscriminate friendliness among foster children and suggest that indiscriminate friendliness is part of a larger pattern of dysregulation associated with inconsistency in caregiving.

The willingness to approach and interact with unfamiliar adults in a familiar fashion (e.g., making personal comments to, initiating physical contact with, and being willing to leave with the adult) is a pattern of behavior that has been noted in children who have had early adverse care experiences such as maltreatment and the absence of a consistent caregiver. This behavior has been variously called indiscriminate friendliness (Chisholm, 1998), disinhibited social behavior (Bruce, Tarullo, & Gunnar, 2009), and disinhibited attachment behavior (O'Connor et al., 2003). It is also a symptom of reactive attachment disorder–disinhibited type (American Psychiatric Association, 1994). (In this paper, we use the term indiscriminate friendliness.) Such behavior is problematic because it might expose the children to safety risks (O'Connor, Rutter, & the English and Romanian Adoptees [ERA] Study Team, 2000) and might negatively impact relationships with caregivers (Albus & Dozier, 1999). Additionally, indiscriminate friendliness appears to be persistent and linked to later difficulties in peer relationships (Hodges & Tizard, 1989; Roy, Rutter, & Pickles, 2004) and to inattention and poor impulse control (Kreppner, O'Connor, Rutter, & the ERA Study Team, 2001; Roy et al., 2004; Rutter, Kreppner, & O'Connor, 2001). However, although indiscriminate friendliness has been described extensively in postinstitutionalized children (i.e., children internationally adopted following institutional rearing; Bruce et al., 2009; Chisholm, 1998; O'Connor et al., 2003), less is known

about this behavior in maltreated foster children. Further, the etiology of indiscriminate friendliness is not well understood, making it challenging to intervene effectively with this behavior. The purpose of the current study was to compare levels of indiscriminate friendliness in maltreated foster children and nonmaltreated children and to examine the precursors and correlates of indiscriminate friendliness in these children.

Indiscriminate Friendliness in Maltreated Foster Children

It is believed that early caregiving is central to the development of indiscriminate friendliness. However, there are different theories explaining how adverse caregiving might lead to indiscriminate friendliness. On one hand, it has been argued that approaching unfamiliar adults might prove adaptive in profoundly inconsistent or nonresponsive caregiving environments in which children's basic needs are not being met because some adults might respond positively and provide care (Chisholm, 1998). An alternative theory postulates that because the experience of consistent, responsive caregiving appears to be critical to a child's ability to regulate his/her behavior (Sroufe, 1989), children who have had inconsistent or nonresponsive caregivers might not learn to regulate their approach tendencies.

Similar to postinstitutionalized children, foster children experience disturbances in the early caregiving environment, including neglectful and/or abusive care in their families of origin and caregiver disruptions attendant with transitions into and within foster care. However, the experiences of postinstitutionalized children and foster children appear to be qualitatively different. For example, foster children are likely to have had a specific caregiver for at least part of their early lives; in contrast, postinstitutionalized children are unlikely to have had a specific caregiver during their early years. Thus, it is unclear whether the same patterns of behavior, including indiscriminate friendliness, would be observed in postinstitutionalized children and foster children. Documenting this behavior across populations might contribute to our understanding of how different types of early adverse care have a common impact on behavior.

While only one case study (Albus & Dozier, 1999) has specifically described indiscriminate friendliness in foster children, related studies have examined attachment disorders, including the disinhibited type. There are indications that foster children are at risk for developing attachment disorders (Zeanah et al., 2004), but much of the evidence is limited to case studies (Hinshaw-Fuselier, Boris, & Zeanah, 1999; Zeanah et al., 2004); only Boris and colleagues (2004) compared foster children to nonmaltreated children. Furthermore, although these studies included the disinhibited type of attachment disorder, they did not focus solely on that type. Thus, their utility for drawing conclusions about indiscriminate friendliness in foster children is somewhat limited. The current study expands upon prior research by investigating indiscriminate friendliness in a larger sample of foster children and a comparison sample of nonmaltreated children.

Hypothesized Precursors of Indiscriminate Friendliness

Although indiscriminate friendliness has not been widely studied in foster children, this population presents a unique opportunity for exploring the precursors of this behavior. Postinstitutionalized children are very likely to have experienced some forms of maltreatment, most certainly neglect, but very little documentation of their specific maltreatment experiences exists (Gunnar, Bruce, & Grotevant, 2000). For foster children, there is often quite detailed documentation of past maltreatment in child welfare records, making it possible to examine potential precursors of indiscriminate friendliness in finer detail than has been feasible with postinstitutionalized children. As is discussed above, children who have experienced nonresponsive care from a primary caregiver might approach unfamiliar adults in an attempt to receive some attention or care (Chisholm, 1998). Thus, one would expect to find direct

effects between the types of maltreatment that suggest that the children's basic needs were not being met and indiscriminate friendliness. We examined the hypothesis that severity of physical neglect, supervisory neglect, and emotional maltreatment would be associated with higher rates of indiscriminate friendliness. Given the lack of research in this area, we did not have specific hypotheses about the severity of physical abuse and sexual abuse.

Placement records make it possible to quantify the number of caregivers for foster children (at least while in care), which might not be possible for postinstitutionalized children (Gunnar et al., 2000). Multiple caregivers and inconsistent caregiving are believed to contribute to indiscriminate friendliness (Albus & Dozier, 1999; Chisholm, 1998). Thus, in the current study, the relationship between the number of foster caregivers and indiscriminate friendliness was explored with the expectation that indiscriminate friendliness would be directly associated with having had a greater number of caregivers.

Hypothesized Correlates of Indiscriminate Friendliness

Because it is a symptom of reactive attachment disorder (American Psychiatric Association, 1994), the majority of research on correlates of indiscriminate friendliness has focused on children's attachment behaviors. However, the association between these behaviors and indiscriminate friendliness is somewhat unclear. Postinstitutionalized children who exhibit indiscriminate friendliness tend to have insecure or atypical attachment relationships (Chisholm, 1998; O'Connor et al., 2003). However, indiscriminate friendliness and secure attachment behaviors are not mutually exclusive. Some securely attached children also evidence indiscriminate friendliness (Bruce et al., 2009; Chisholm, 1998; O'Connor et al., 2003; Zeanah, Smyke, & Dumitrescu, 2002). Such findings have led some researchers to conclude that, although indiscriminate friendliness might co-occur with an insecure or atypical attachment, it is not necessarily indicative of a disturbance in the attachment relationship (Chisholm, 1998). However, because the association between attachment-related behaviors and indiscriminate friendliness has not yet been studied in foster children, we examined this association.

As is discussed above, because early caregiving appears to be critical to development of attention and behavior regulation, indiscriminate friendliness might be part of a broad pattern of deficits in regulation in children who received adverse care (Bruce et al., 2009; Maclean, 2003). That is, indiscriminate friendliness might be ascribed to the children's inability to regulate their approach toward and interactions with unfamiliar adults. Postinstitutionalized children and foster children demonstrate persistent difficulties with attention and impulse control (Kreppner et al., 2001; Pears & Fisher, 2005; Stevens et al., 2008) that are linked to indiscriminate friendliness more strongly than other types of externalizing behaviors (Kreppner et al., 2001; Roy et al., 2004; Rutter et al., 2001). More specifically, deficits in inhibitory control, an aspect of regulation that involves the ability to inhibit a prepotent attentional or behavioral response, might be linked to indiscriminate friendliness. Bruce and colleagues (2009) found that indiscriminate friendliness in postinstitutionalized children was associated with poorer inhibitory control. To date, however, the association between deficits in inhibitory control and indiscriminate friendliness in foster children has not been explored.

Hypothesized Mediators Between Early Adverse Care and Indiscriminate Friendliness

As is noted above, the experiences of maltreatment and/or having multiple caregivers might exert direct effects on indiscriminate friendliness because children who have not received adequate care might approach unfamiliar adults in a sociable manner in an effort to obtain care. Alternatively, the experiences of maltreatment and multiple caregivers might exert influence

on indiscriminate friendliness through effects on attachment-related behaviors and inhibitory control. Both behaviors have been associated with early adverse care. Neglectful and abusive parenting is linked to the formation of insecure attachment relationships (Baer & Martinez, 2006), and caregiver disruptions affect the quality of attachment and attachment-related behaviors (e.g., Stovall-McClough & Dozier, 2004). Similarly, maltreatment and harsh parenting appear to have deleterious effects on regulatory abilities in general (Beers & DeBellis, 2002) and inhibitory control in particular (Zhou, Eisenberg, Wang, & Reiser, 2004). Additionally, inhibitory control appears to be negatively affected by multiple caregiver transitions (Lewis, Dozier, Ackerman, & Sepulveda, 2007; Lengua, Honorado, & Bush, 2007). Thus, in addition to testing direct effects of maltreatment and multiple caregivers on indiscriminate friendliness, we tested the alternative hypothesis that the effects of these early experiences on indiscriminate friendliness are mediated by attachment-related behaviors and inhibitory control.

Method

Participants

The sample used in the current study was a subsample of children included in an efficacy trial to evaluate a treatment foster care program for preschool-aged children. The entire sample included a foster care (FC) group of 117 preschool-aged maltreated children residing in foster care and a community comparison (CC) group of 60 age- and SES-matched, nonmaltreated children living with their biological families. For the FC group, children between 3 and 6 years of age entering new foster placements (i.e., first-time placements, reentries following failed reunifications, or moves between placements) were referred to the study through the local child welfare system during a four year period (2000–2003). The CC group was recruited via flyers posted throughout the community and via advertisements in local newspapers and newsletters. The CC families were included in the study if they met the following criteria: child had lived consistently with at least one biological parent, household income was no more than \$30,000, parental education level was less than a 4-year college degree, and family had no previous involvement with child welfare services (as verified by a search of child protective case records). For the FC children, informed consent was obtained from the caseworkers (i.e., the legal guardians of the children while in foster care) and the foster parents; for the CC children, informed consent was obtained from the biological parents.

The FC children were assessed when they had been in their placements for an average of 4 weeks ($SD = 1.12$; range = 1 – 9 weeks) and then again every 3 months for a period of 24 months. The measures of indiscriminate friendliness and attachment-related behaviors from the baseline and 3-month assessments were combined to increase the likelihood that these measures were capturing stable patterns of behavior (versus a reaction to a new placement). Because 24 FC children changed placements between the two assessments and had been in their new placements for less than 12 weeks, they were removed from analyses. Thus, the sample used in the current study included 93 FC children who had been in their placements for an average of 17 weeks ($SD = 1.84$; range = 12 – 25 weeks) at the time of the 3-month assessment and 60 CC children. The FC children who were included in the sample did not differ from those who were excluded on any of the demographic or other variables in the study. As is noted above, all of the FC children were part of a larger efficacy trial to evaluate a treatment foster care program and, thus, were randomly assigned to intervention or comparison groups at study entry. Because the foster care groups in the efficacy trial did not differ significantly on these variables at either assessment, results are reported for the combined FC group.

The final FC and CC groups did not differ on mean child age, gender, or ethnicity. Mean age at baseline assessment was 4.45 years ($SD = 0.85$; range = 3.00 – 6.78 years) in the FC group

and 4.33 years ($SD = 0.79$; range = 2.99 – 6.37 years) in the CC group. Boys made up 52% of the FC group and 53% of the CC group. The ethnicity breakdown of the FC group was as follows: 87% European American, 1% African American, 8% Latino, and 4% Native American. The ethnicity breakdown of the CC group was as follows: 77% European American, 7% African American, 8% Latino, 7% Native American, and 1% Pacific Islander. There were 24 sibling dyads (14 FC and 10 CC), 2 FC sibling triads, and 1 FC sibling tetrad in the study. To adjust standard errors for the nonindependence of the sibling data, the cluster design approach within Mplus (Muthén & Muthén, 2004) was used in multivariate analyses.

The median income level for the CC families was \$15,000–19,999. The poverty level for a family of four was \$18,660 (U.S. Census Bureau, 2004) at the time the data were collected. Thus, half of the families were below or at the poverty level. While it was difficult to obtain demographic information about the biological families of the children in foster care, 28 children returned to their biological families during the course of the study and demographic data were gathered from their biological parents. Although the median income level in the biological families of the FC children ($Mdn = \$10,000–14,999$) was significantly lower than that of the CC families, the groups did not differ significantly on the percentage of families below or at the poverty level. There was, however, a significant difference in the highest level of education attained by the parents (CC Mdn = some college or vocational school courses; FC biological families Mdn = high school). Because insufficient data were available on the highest level of education for the biological parents of the FC children, it was not possible to include this as a control variable in analyses with the whole sample. However, preliminary analyses with the children for whom biological parent demographic information was available showed no significant associations between parental income and education and indiscriminate friendliness.

Measures

Data were gathered via laboratory-based assessments with the children and telephone interviews with the caregivers. Individual scales and multimethod, multiagent composite scores were examined in the analyses. Using Patterson and Bank's (1986) method to form internally reliable scales or composite scores, included items had to show an alpha of .60 or higher and an item-total correlation of .20 or higher.

Indiscriminate friendliness—Indiscriminate friendliness was measured via caregiver reports on the Indiscriminate Friendliness Interview (Chisholm, 1998; Chisholm, Carter, Ames, & Morison, 1995), which has been shown to have good concurrent validity with other measures of indiscriminate friendliness (Zeanah et al., 2002). The interview consists of five items: (1) how friendly the child had been with new adults, (2) whether the child had ever been shy or afraid of new adults, (3) what the child had done when meeting new adults, (4) how willing the child would have been to go home with a new adult, and (5) whether the child had had the tendency to wander. At both the baseline and the 3-month assessments, the caregivers were asked to evaluate these items for the past 2 weeks. They were given response choices, only one of which represented indiscriminate friendliness; the children received a score of 1 for the item if the caregiver endorsed this response. Items were summed to produce a scale score. Only the fifth item did not show an acceptable item-total correlation; it had a lower base rate of occurrence than the other items and, thus, was dropped from the scale. The Cronbach's alphas for the 4-item scale were .78 and .81 at the baseline and 3-month assessments, respectively. The scores were well correlated across time ($r = .55, p < .001$) and so were averaged to produce an indiscriminate friendliness score (possible range = 0 – 4).

Maltreatment history—The FC children's maltreatment experiences were coded from child protective case records using the Maltreatment Classification System (Barnett, Manly &

Cicchetti, 1993), which codes the severity of different types of maltreatment: physical abuse, sexual abuse, physical neglect (i.e., parental failure to provide adequate food, clothing, medical care, or safe living environment), supervisory neglect (i.e., parental failure to provide age-appropriate supervision), and emotional maltreatment (i.e., parental rejection, abandonment, or failure to protect child from witnessing traumatic events). Coders examined the case records to identify incidents of maltreatment that matched the maltreatment definitions and were reported by a mandated reporter or founded by child protective services. Each incident was subsequently coded for severity from 1 (*less serious maltreatment*) to 5 (*severe or potentially life-threatening maltreatment*). Children received a score of 0 if they did not experience a particular type of maltreatment for a given incident. Training in the use of the Maltreatment Classification System was conducted by one of its authors (Manly). During data collection, 20% of the files were double-coded for interrater agreement. Agreement on the identification of incidents was high (80%). Agreement was similarly high for severity: the average kappa was .72 across all of the maltreatment categories (physical abuse $\kappa = .82$, sexual abuse $\kappa = .67$, physical neglect $\kappa = .65$, supervisory neglect $\kappa = .65$, and emotional maltreatment $\kappa = .79$). For each FC child, we calculated a mean severity score for each maltreatment category by averaging the severity of each type of maltreatment across all incidents.

Foster care placement history—Up-to-date placement records, including date of first entry into the child welfare system and entry/exit dates from all foster placements thereafter, were obtained for each FC child and were used to calculate the number of foster caregivers.

Attachment-related behaviors—The Parent Attachment Diary (Stovall & Dozier, 2000; Stovall-McClough & Dozier, 2004) was originally developed to record infants' attachment-related behaviors in three distressing situations (e.g., being separated from the caregiver, physically hurt, and scared). It has demonstrated significant concordance with the Strange Situation Paradigm in foster infants (Stovall-McClough & Dozier, 2004). In consultation with Dozier, we modified the measure for use with preschoolers. This adapted version of the Parent Attachment Diary has been successfully used to measure longitudinal change in attachment-related behaviors among foster children (Fisher & Kim, 2007). Using a checklist of responses, the caregivers recorded their children's typical response to each situation during the past 2 weeks at both the baseline and 3-month assessments. The responses represented one of three classifications: secure proximity seeking/contact maintenance, avoidance, or resistance. The percentage of secure attachment-related behaviors was calculated by summing the number of secure proximity seeking/contact maintenance behaviors and dividing by the total number of behaviors. Scores from the baseline and 3-month assessments were reasonably correlated ($r = .36, p < .001$) and were averaged to produce a secure attachment-related behavior score (possible range = 0 – 1.0).

Inhibitory control—Inhibitory control was assessed via a composite measure of laboratory assessments and caregiver reports given at the baseline assessment. Laboratory assessments included the modified Stroop task for children (Gerstadt, Hong, & Diamond, 1994), which has been shown to be strongly associated with other measures of inhibitory control (Carlson & Moses, 2001). The children were instructed to say “night” when they saw a card with a yellow sun on a white background and to say “day” when they saw a card with a white moon on a black background. Sixteen cards were presented in pseudorandom order. The children received 1 point for each correct answer. The mean correct score was used in analyses. The Dimensional Change Card Sort task (adapted from Frye, Zelazo, & Palfai, 1995) was also used. The children were asked to sort a series of cards first according to one criterion (shape) and then according to another criterion (color), thus having to inhibit the tendency to respond according to the first criterion. For three of the postswitch trials (after the sorting criterion changed), the cards were incompatible with the preswitch rules. The mean correct score for the incompatible trials was

used in analyses. Additionally, the attention/executive function domain of the NEPSY: A Developmental Neuropsychological Assessment (Korkman, Kirk, & Kemp, 1998) was used. For 3- and 4-year-olds, this domain includes two subscales: visual attention and statue. (The NEPSY was not administered to children who were over the age of 5 ($n = 44$) at study entry; thus, this score was not included in the composite score for these children.) For the caregiver reports of inhibitory control, the attention problems subscale of the Child Behavior Checklist (Achenbach, 1991) and the AD/HD impulsive/hyperactive subscale of the Early Childhood Inventory (Gadow & Sprafkin, 1996) were used. Scores on the laboratory measures and caregiver reports were standardized and averaged to form an inhibitory control composite score (standardized $\alpha = .66$). Although this particular inhibitory control composite has not been used previously, the modified Stroop task and Dimensional Change Card Sort task (with other tasks) has been used with preschool-aged nonmaltreated children to create an inhibitory control composite that was well correlated with parental report measures (Carlson & Moses, 2001).

General cognitive ability—General cognitive ability was measured using the average of the scaled scores for the vocabulary and block design subscales of the Wechsler Preschool and Primary Scales of Intelligence–Revised (Wechsler, 1989).

Results

Group differences on indiscriminate friendliness are presented first, followed by correlational and path analyses of associations between indiscriminate friendliness and its hypothesized precursors and correlates. Descriptive statistics for the precursors and correlates by group are shown in Table 1. In terms of maltreatment, 12% of the children in the FC group had experienced physical abuse, 17% sexual abuse, 83% physical neglect, 90% supervisory neglect, and 89% emotional maltreatment. In the CC group, 97% of the children experienced more than one type of maltreatment. As shown in the table, the FC group showed significantly fewer secure attachment-related behaviors, lower inhibitory control, and lower general cognitive ability.

Group Differences on Indiscriminate Friendliness

Indiscriminate friendliness was higher for the FC children ($M = 2.33$; $SD = 1.33$; range = 0–4) than for the CC children ($M = 1.55$; $SD = 1.23$; range = 0–4), $t(144) = 3.55$, $p < .01$. To further explore the prevalence of indiscriminate friendliness, we examined children's scores from the Indiscriminate Friendliness interview. Although there are no published cut-off scores indicating different levels of indiscriminate friendliness, we reasoned that displaying at least three of the four behaviors would indicate moderate-to-high levels. Using this criterion, 46% of the FC children but only 19% of the CC children evidenced moderate-to-high levels of indiscriminate friendliness, $\chi^2(1) = 10.86$, $p < .01$.

Associations Between Indiscriminate Friendliness and the Precursors and Correlates

As was hypothesized, lower inhibitory control was significantly associated with higher indiscriminate friendliness (see Table 2). The percentage of secure attachment-related behaviors was not significantly associated with indiscriminate friendliness. Additionally, indiscriminate friendliness was not significantly correlated with age at baseline assessment or general cognitive ability. Because age at the baseline assessment was correlated at $r = 1.0$ with age at the 3-month assessment, only age at the baseline assessment was used in the correlation and path analyses. Contrary to expectations, there were no significant direct associations between indiscriminate friendliness and any of the maltreatment variables or the number of foster caregivers. However, as was expected, having had a higher number of foster caregivers was associated with lower inhibitory control. Interestingly, higher mean severity of emotional maltreatment was associated with higher inhibitory control. Age and general cognitive ability

were also positively associated with inhibitory control. Secure attachment-related behaviors were negatively associated with severity of emotional maltreatment and age. Having had a higher number of foster caregivers was associated with a higher percentage of secure attachment-related behaviors.

Next, we performed a path analysis using MPlus 5.1 (Muthén & Muthén, 2004) to examine the association between inhibitory control and indiscriminate friendliness while controlling for foster care status, age, general cognitive ability, and secure attachment-related behaviors. This analysis allowed for clustering of siblings within groups, thus adjusting for the nonindependence of observations. Missing data were estimated using full information maximum likelihood. The model showed good fit, $\chi^2(4) = 1.54, p = .82, CFI = 1.00, RMSEA = .0001$. When all of the variables were included in the model, the negative association between inhibitory control and indiscriminate friendliness remained significant (see Figure 1). Notably, when inhibitory control and foster care status were included in the model, group status ceased to be significantly associated with indiscriminate friendliness, while still showing a covariance with inhibitory control. This suggests that group differences in indiscriminate friendliness might be attributable to group differences in inhibitory control, although this was not tested directly here.

Mediational Models

It was hypothesized that attachment-related behaviors and inhibitory control would mediate the association between the FC children's maltreatment experiences and number of foster caregivers and later indiscriminate friendliness. However, only inhibitory control was significantly associated with indiscriminate friendliness. Because none of the maltreatment variables or the number of foster caregivers were directly related to indiscriminate friendliness, one of the requirements for mediation was not met. Nevertheless, given that severity of emotional maltreatment and number of foster caregivers *were* associated with inhibitory control, it seemed that these two variables might be indirectly linked to indiscriminate friendliness through inhibitory control. Thus, it seemed warranted to examine these potential indirect paths controlling for covariates and the nonindependence of observations.

A path model was tested in which severity of emotional maltreatment, number of foster caregivers, age, inhibitory control, and general cognitive ability were included. Attachment-related behaviors were not included because this variable was not related to indiscriminate friendliness in either the bivariate correlations or path model; group status was not included because the maltreatment and foster care placement variables were only available for the FC children; and the severities of physical abuse, sexual abuse, physical neglect, and supervisory neglect were not included because these variables were not related to indiscriminate friendliness or inhibitory control. The model, which is shown in Figure 2, exhibited acceptable fit, $\chi^2(4) = 1.17, p = .88, CFI = 1.00, RMSEA = .001$. Inhibitory control was negatively associated with indiscriminate friendliness. Additionally, number of foster caregivers was negatively associated with inhibitory control, suggesting an indirect path from number of foster caregivers to indiscriminate friendliness through its negative effect on inhibitory control. Emotional maltreatment was not significantly associated with inhibitory control in this model.

Discussion

This paper expands upon previous studies of indiscriminate friendliness among populations of children with histories of early adverse care by examining this behavior in maltreated foster children. Consistent with our hypotheses, foster children displayed higher levels of indiscriminate friendliness than nonmaltreated children. Notably, 19% of the nonmaltreated children in the current study exhibited moderate-to-high levels of indiscriminate friendliness, and only 23% showed no such behaviors. Although the nonmaltreated children could be

considered to be at risk due to their low SES, a small percentage of children from higher SES backgrounds displayed moderate-to-high levels of indiscriminate friendliness (Bruce et al., 2009). This suggests that, although it is more prevalent in the presence of early adverse care, indiscriminate friendliness might be distributed along a continuum of risk in the general population rather than being strictly limited to severely neglected or maltreated populations.

Consistent with previous research with postinstitutionalized children (Bruce et al., 2009), we found that inhibitory control was negatively associated with indiscriminate friendliness even when controlling for general cognitive ability. This suggests that the association between inhibitory control and indiscriminate friendliness was not likely to be solely attributable to individual differences in general cognitive abilities. Additionally, the association does not appear to be age-related. Thus, children with difficulty inhibiting prepotent attentional and behavioral responses also appear to demonstrate higher levels of indiscriminate friendliness.

Research with older children and adults has suggested that specific regions of the prefrontal cortex underlie inhibitory control abilities (Casey et al., 1997; Pardo, Pardo, Janer, & Raichle, 1990). These regions have a protracted developmental trajectory (Welsh, Pennington, & Groisser, 1991) and might be particularly vulnerable to the effects of early adverse care. Given this vulnerability, we hypothesized that the effects of maltreatment and multiple foster caregivers on indiscriminate friendliness might be mediated by inhibitory control. Neither maltreatment severity nor number of foster caregivers was directly associated with indiscriminate friendliness. However, number of foster caregivers was negatively associated with inhibitory control, which was, in turn, negatively associated with indiscriminate friendliness. Thus, a higher number of foster caregivers appears to be associated with indiscriminate friendliness indirectly through negative associations with inhibitory control. Notably, the negative association between the number of foster caregivers and inhibitory control replicates previous research linking multiple foster placements with poorer inhibitory control (Lewis et al., 2007). This finding is also consistent with research suggesting that caregiver transitions impinge upon inhibitory control in nonmaltreated children (Lengua et al., 2007).

It is possible that indiscriminate friendliness might have been present prior to placement in foster care (particularly if the child had experienced multiple transitions in non-foster caregivers); this indiscriminately friendly behavior subsequently might have contributed to failures in foster placements. However, indiscriminate friendliness was not directly associated with the number of foster caregivers that the child had experienced. It is important to note, however, that there may be a bi-directional relationship between inhibitory control and the number of foster caregivers; children who show deficits in regulation due to a history of inconsistent caregiving are also likely to manifest disruptive behaviors, which might contribute to the failure of foster placements.

The lack of direct associations between indiscriminate friendliness and the foster children's maltreatment and foster care placement experiences suggests that these behaviors are not merely an adaptive response to a profoundly inconsistent or nonresponsive caregiving environment. Rather than signifying a search for care from other adults, indiscriminate friendliness may represent a broad pattern of deficits in regulation. The lack of associations between indiscriminate friendliness and aspects of early adverse care is consistent with prior studies of attachment disorders in foster children (Boris, Zeanah, Larrieu, Scheeringa, & Heller, 1998) and of indiscriminate friendliness in postinstitutionalized children (Chisholm, 1998; O'Connor, Bredenkamp, Rutter, & the ERA Study Team, 1999). Future research might concentrate on identifying specific aspects of early adverse care experiences that are particularly influential in the development of inhibitory control and, thus, indiscriminate friendliness.

The association between inhibitory control and indiscriminate friendliness in the current study is particularly interesting given the lack of association between secure attachment-related behaviors and indiscriminate friendliness. It might be argued that this lack of association resulted from the use of a measure of indiscriminate friendliness rather than a measure of attachment disorder. To date, the literature on foster children has used measures of attachment disorders. However, prior research with postinstitutionalized children has found substantial convergence among measures of indiscriminate friendliness and attachment disorders (Zeanah et al., 2002). It also does not appear to be the case that the association between inhibitory control and indiscriminate friendliness was only present among children who exhibited fewer secure attachment-related behaviors. When children who exhibited 75% or more secure attachment-related behaviors were examined ($n = 84$), indiscriminate friendliness and inhibitory control remained significantly negatively correlated ($r = -.34, p < .01$). These findings do not rule out the possibility that attachment relationships earlier in life influence the development of inhibitory control or indiscriminate friendliness. Given that inhibitory control appears to be affected by some aspects of early adverse care, early attachment relationships might influence indiscriminate friendliness through an effect on inhibitory control.

Limitations and Conclusions

Several caveats regarding the current study should be noted. The measure of indiscriminate friendliness has been used with postinstitutionalized children (Chisholm, 1998; Chisholm et al., 1995) and has been shown to have good concurrent validity with other measures of indiscriminate friendliness (Zeanah et al., 2002). However, we employed a multiple-choice rather than an open-ended interview format. Although preliminary analyses revealed that the caregiver reports were well correlated with observer ratings of the children's overly friendly behaviors with unfamiliar adults, the use of the open-ended format could have influenced the number of behaviors that the caregivers endorsed. Additionally, as they were well-correlated, we combined the measures of indiscriminate friendliness from the baseline and 3-month assessments to increase reliability of the measure. However, the baseline assessment occurred relatively early in the foster parent-child relationship so this score might not have been as stable an estimate as the 3-month score.

The Parent Attachment Diary was adapted to measure attachment-related behaviors in preschool-aged children in consultation with one of its authors. Concordance between the Parent Attachment Diary and the Strange Situation Paradigm has been demonstrated in foster infants (Stovall & Dozier, 2000; Stovall-McClough & Dozier, 2004). However, such concordance has not yet been established for preschool-aged foster children. Thus, it is possible that different associations between attachment-related behaviors and indiscriminate friendliness might have been found had the Strange Situation been used.

Finally, the measures of inhibitory control have all been well-validated as individual measures with preschool-aged children (e.g., Carlson & Moses, 2001; Korkman et al., 1998). In the current study, these measures were combined into a composite to increase the reliability of the measures. However, this particular composite of inhibitory control measures has not been used in any other studies to our knowledge and as such has not been validated previously.

In summary, the results of the current study demonstrate that foster children exhibit indiscriminate friendliness at higher rates than their nonmaltreated peers. The results also suggest that some of the children demonstrated indiscriminate friendliness despite exhibiting secure attachment-related behaviors towards their current caregivers. However, the children who showed higher levels of indiscriminate friendliness were not able to inhibit prepotent responses. This pattern of results is consistent with recent findings in a study of postinstitutionalized children (Bruce et al., 2009). Overall, the similar patterns of results across postinstitutionalized and foster children suggest that indiscriminate friendliness might reflect

underlying deficits in inhibitory control. This finding is encouraging from an intervention standpoint, as existing evidence suggests that inhibitory control can be improved through intervention (Rueda, Rothbart, McCandliss, Saccomanno, & Posner, 2005). Thus, foster children's inhibitory control could be a primary target for interventions, ultimately leading to improvements in long-term psychosocial and behavioral outcomes.

Acknowledgments

Support for this research was provided by the following grants: R01 DA021424, NIDA, NIH, U.S. PHS and R01 MH059780, NIMH, NIH, U.S. PHS. The authors would like to thank Kristen Greenley for project management, Matthew Rabel and Katie Lewis for editorial assistance, Mary Dozier for consultation on the Parent Attachment Diary, and the children and families who participated in the project.

References

- Achenbach, TM. Manual for the Child Behavior Checklist/4–18 and 1991 Profile. University of Vermont: Burlington; 1991.
- Albus KE, Dozier M. Indiscriminate friendliness and terror of strangers in infancy: Contributions of infants in foster care. *Infant Mental Health Journal* 1999;20:30–41.
- Diagnostic and Statistical Manual of Mental Disorders. Vol. 4th ed.. Washington, DC: Author; 1994. American Psychiatric Association.
- Baer JC, Martinez CD. Child maltreatment and insecure attachment: A meta-analysis. *Journal of Reproductive and Infant Psychology* 2006;24:187–197.
- Patterson GR, Bank L. Bootstrapping your way in the nomological thicket. *Behavioral Assessment* 1986;8:49–73.
- Barnett, D.; Manly, JT.; Cicchetti, D. Defining child maltreatment: The interface between policy and research. In: Cicchetti, D.; Toth, S., editors. *Child abuse, child development, and social policy*. Vol. 8. Norwood, NJ: Ablex; 1993. p. 7-73.
- Beers SR, DeBellis MD. Neuropsychological function in children with maltreatment-related Posttraumatic Stress Disorder. *American Journal of Psychiatry* 2002;159:483–486. [PubMed: 11870018]
- Boris NW, Hinshaw-Fuselier S, Smyke AT, Scheeringa MS, Heller SS, Zeanah CH. Comparing criteria for attachment disorders: establishing reliability and validity in high-risk samples. *Journal of the American Academy of Child and Adolescent Psychiatry* 2004;45:568–577. [PubMed: 15100563]
- Boris NW, Zeanah CH, Larrieu JA, Scheeringa MS, Heller SS. Attachment disorders in infancy and early childhood: A preliminary investigation of diagnostic criteria. *American Journal of Psychiatry* 1998;155:295–297. [PubMed: 9464217]
- Bruce J, Tarullo AR, Gunnar MR. Disinhibited social behavior among internationally adopted children. *Development and Psychopathology* 2009;21:157–171. [PubMed: 19144228]
- Carlson SM, Moses LJ. Individual differences in inhibitory control and children's theory of mind. *Child Development* 2001;72:1032–1053. [PubMed: 11480933]
- Casey BJ, Castellanos FX, Giedd JN, Marsh WL, Hamburger SD, Schubert AB. Implication of right frontostriatal circuitry in response inhibition and Attention-Deficit/Hyperactivity Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry* 1997;36:374–383. [PubMed: 9055518]
- Chisholm K. A three year follow-up of attachment and indiscriminate friendliness in children adopted from Romanian orphanages. *Child Development* 1998;69:1092–1106. [PubMed: 9768488]
- Chisholm K, Carter MC, Ames EW, Morison SJ. Attachment security and indiscriminately friendly behavior in children adopted from Romanian orphanages. *Development and Psychopathology* 1995;7:283–294.
- Fisher PA, Kim HK. Intervention effects on foster preschoolers' attachment-related behaviors from a randomized trial. *Prevention Science* 2007;8:161–170. [PubMed: 17340186]
- Frye D, Zelazo PD, Palfai T. Theory of mind and rule-based reasoning. *Cognitive Development* 1995;10:483–527.

- Gadow, KD.; Sprafkin, J. Early Childhood Inventories Manual. Stony Brook, NY: Checkmate Plus; 1996.
- Gerstadt CL, Hong YJ, Diamond A. The relationship between cognition and action: Performance of children 3-1/2–7 years old on a Stroop-like day-night test. *Cognition* 1994;53:129–153. [PubMed: 7805351]
- Gunnar MR, Bruce J, Grotevant HD. International adoption of institutionally reared children: Research and policy. *Development and Psychopathology* 2000;12:677–693. [PubMed: 11202039]
- Hinshaw-Fuselier S, Boris NW, Zeanah CH. Reactive attachment disorder in maltreated twins. *Infant Mental Health Journal* 1999;20:42–59.
- Hodges J, Tizard B. Social and family relationships of ex-institutional adolescents. *Journal of Child Psychology and Psychiatry* 1989;30:77–97. [PubMed: 2925822]
- Korkman, M.; Kirk, U.; Kemp, SL. San Antonio, TX: Psychological; 1998. NEPSY: A Developmental Neuropsychological Assessment.
- Kreppner JM, O'Connor TG, Rutter M. the ERA Study Team. Can inattention/overactivity be an institutional deprivation syndrome? *Journal of Abnormal Child Psychology* 2001;29:518–528.
- Lengua LJ, Honorado E, Bush N. Cumulative risk and parenting as predictors of effortful control and social competence in preschool children. *Journal of Applied Developmental Psychology* 2007;28:40–55.
- Lewis E, Dozier M, Ackerman J, Sepulveda S. The effect of caregiving instability on adopted children's inhibitory control abilities and oppositional behavior. *Developmental Psychology* 2007;43:1415–1427. [PubMed: 18020821]
- Maclean K. Institutionalization and child development. *Development and Psychopathology* 2003;15:853–884. [PubMed: 14984130]
- Muthén, LK.; Muthén, BO. Mplus user's guide. Vol. 3rd ed.. Los Angeles: Authors; 2004.
- O'Connor TG, Bredenkamp D, Rutter M. the English and Romanian Adoptees Study Team. Attachment disturbances and disorders in children exposed to early and severe deprivation. *Infant Mental Health Journal* 1999;20:10–29.
- O'Connor TG, Marvin RS, Rutter M, Olrick JF, Britner PA. the English and Romanian Adoptees Study Team. Child-parent attachment following early institutional deprivation. *Development and Psychopathology* 2003;15:19–38. [PubMed: 12848433]
- O'Connor TG, Rutter M. the English and Romanian Adoptees Study Team. Attachment disorder following early severe deprivation: Extension and longitudinal follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry* 2000;39:703–712. [PubMed: 10846304]
- Pardo JV, Pardo PJ, Janer KW, Raichle ME. The anterior cingulate cortex mediates processing selection in the Stroop attentional conflict paradigm. *Proceedings of the National Academy of Sciences of the United States of America* 1990;87:256–259. [PubMed: 2296583]
- Patterson GR, Bank L. Bootstrapping your way in the nomological thicket. *Behavioral Assessment* 1986;8:49–73.
- Pears KC, Fisher PA. Developmental, cognitive, and neuropsychological functioning in preschool-aged foster children: Associations with prior maltreatment and placement history. *Journal of Developmental and Behavioral Pediatrics* 2005;26:112–122. [PubMed: 15827462]
- Roy P, Rutter M, Pickles A. Institutional care: Associations between overactivity and lack of selectivity in social relationships. *Journal of Child Psychology and Psychiatry* 2004;45:866–873. [PubMed: 15056316]
- Rueda MR, Rothbart MK, McCandliss BD, Saccomanno L, Posner MI. Training, maturation, and genetic influences on the development of executive attention. *Proceedings of the National Academy of Sciences* 2005;102:14931–14936.
- Rutter ML, Kreppner JM, O'Connor TG. Specificity and heterogeneity in children's responses to profound institutional privation. *British Journal of Psychiatry* 2001;179:97–103. [PubMed: 11483469]
- Sroufe, LA. Pathways to adaptation and maladaptation: Psychopathology as developmental deviation. In: Cicchetti, D., editor. *The emergence of a discipline: Rochester Symposium on Developmental Psychopathology*. Vol. Vol. 1. Hillsdale, NJ: Lawrence Erlbaum Associates; 1989.

- Stevens SE, Sonuga-Barke EJS, Kreppner JM, Beckett C, Castle J, Colvert E, Groothes C, Hawkins A, Rutter M. Inattention/overactivity following early severe institutional deprivation. *Journal of Abnormal Child Psychology* 2008;36:385–398. [PubMed: 17965931]
- Stovall KC, Dozier MT. The development of attachment in a new relationship: Single subject analyses for 10 foster infants. *Development and Psychopathology* 2000;12:133–156. [PubMed: 10847621]
- Stovall-McClough KC, Dozier M. Forming attachments in foster care: Infant attachment behaviors during the first 2 months of placement. *Development and Psychopathology* 2004;16:253–271. [PubMed: 15487595]
- U.S. Census Bureau. Current Population Survey 2004: Annual Social and Economic Supplement. Washington, DC: U.S. Census Bureau; 2004.
- Wechsler, D. Manual for the Wechsler Preschool and Primary Scales of Intelligence-Revised. San Antonio, TX: Psychological; 1989.
- Welsh MC, Pennington BF, Groisser DB. A normative-developmental study of executive function: A window on prefrontal function in children. *Developmental Neuropsychology* 1991;7:131–149.
- Zeanah CH, Scheeringa MS, Boris NW, Heller SS, Smyke AT, Trapani J. Reactive attachment disorder in maltreated toddlers. *Child Abuse and Neglect* 2004;28:877–888. [PubMed: 15350771]
- Zeanah CH, Smyke AT, Dumitrescu A. Attachment disturbances in young children. II: Indiscriminate behavior and institutional care. *Journal of the American Academy of Child and Adolescent Psychiatry* 2002;41:983–989. [PubMed: 12162634]
- Zhou Q, Eisenberg N, Wang Y, Reiser M. Chinese children's effortful control and dispositional anger/frustration: Relations to parenting styles and children's social functioning. *Developmental Psychology* 2004;40:352–366. [PubMed: 15122962]

* $p < .05$; ** $p < .01$

Figure 1.
Predicting indiscriminate friendliness from the correlates.

* $p < .05$; ** $p < .01$

Figure 2.
Predicting indiscriminate friendliness from the precursors and inhibitory control.

Table 1

Descriptive Statistics for the Precursors and Correlates

Precursors and correlates	FC			CC			
	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>t</i>
Mean severity physical abuse	0.72	1.16	0–4	—	—	—	—
Mean severity sexual abuse	0.72	1.30	0–4	—	—	—	—
Mean severity physical neglect	1.79	1.02	0–4	—	—	—	—
Mean severity supervisory neglect	2.92	1.19	0–5	—	—	—	—
Mean severity emotional maltreatment	2.72	1.36	0–5	—	—	—	—
Number of foster caregivers	1.92	1.39	0–6	—	—	—	—
Secure attachment-related behaviors	0.65	0.26	0–1.0	0.82	0.20	.17–1.0	–4.51**
Inhibitory control	–0.14	0.63	–1.51–1.08	0.32	0.47	–.79–1.21	–5.13**
General cognitive ability	8.15	2.16	3.00–12.50	9.74	2.18	6.00–15.50	–4.37**

Note. FC = foster care sample. CC = community comparison sample.

* $p < .05$.

** $p < .01$.

Table 2

Associations Between Indiscriminate Friendliness and the Precursors and Correlates

Precursors and correlates	Indiscriminate friendliness	Secure attachment-related behaviors	Inhibitory control
Secure attachment-related behaviors	-.16	—	-.01
Inhibitory control	-.32**	-.01	—
Mean severity physical abuse	-.04	-.11	-.03
Mean severity sexual abuse	.10	-.10	-.03
Mean severity physical neglect	-.01	.13	-.03
Mean severity supervisory neglect	.11	.07	.04
Mean severity emotional maltreatment	-.06	-.26*	.24*
Number of foster caregivers	-.01	.22*	-.27*
Age at baseline assessment	.10	-.23**	.26**
Foster care status	.28**	-.33**	-.37**
General cognitive ability	-.16	-.01	.41**

*
 $p < .05$.**
 $p < .01$.