

Adoptive Parents, Adaptive Parents: Evaluating the Importance of Biological Ties for Parental Investment

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Contemporary legal and scholarly debates emphasize the importance of biological parents for children's well-being. Scholarship in this vein often relies on stepparent families even though adoptive families provide an ideal opportunity to explore the role of biology in family life. In this study, we compare two-adoptive-parent families with other families on one key characteristic—parental investment. Using data from the Early Childhood Longitudinal Study, Kindergarten-First Grade Waves (ECLS-K), basic group comparisons reveal an adoptive advantage over all family types. This advantage is due in part to the socioeconomic differences between adoptive and other families. Once we control for these factors, two-adoptive-parent families invest at similar levels as two-biological-parent families but still at significantly higher levels in most resources than other types of families. These findings are inconsistent with the expectations of sociological family structure explanations, which highlight barriers to parental investment in nontraditional families, and evolutionary science's kin selection theory, which maintains that parents are genetically predisposed to invest in biological children. Instead, these patterns suggest that adoptive parents enrich their children's lives to compensate for the lack of biological ties and the extra challenges of adoption.

Adoptive families provide a critical case for evaluating the importance of oft-assumed biological ties between parents and children.

Because they operate outside the context of biological kinship, adoptive families allow us to reconsider why and how family members provide for each other (Berebitsky 2000). In particular, adoptive families are well-suited for investigating the mechanisms behind parents' allocation of resources to their children. Although scholars conceptualize parental investment differently, parental resources and practices are generally thought to play a crucial role in educational and occupational outcomes (Behrman, Pollack, and Taubman 1995; Blau and Duncan 1967; Bourdieu 1977; Coleman 1988). Understanding what underlies the process of parental investment can help determine how family structure benefits or hinders children's life chances.

Sociological work on parental investment examines diverse American family forms such

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as stepfamilies (Biblarz and Raftery 1999), single-parent families (Downey 1994; McLanahan and Sandefur 1994), and biracial families (Cheng and Powell forthcoming); however, little is known about how the adoptive parent-child relationship influences levels of parental investment. This is perplexing given the ongoing public debates surrounding the meaning of family and who counts as family. Adoptive families intersect with many interesting family types—notably those formed through interracial and same-sex parenting—that have received increasing attention in recent years. Additionally, 2–4 percent of all American households include an adoptive child—a number that is projected to increase over time (Brodzinsky, Smith, and Brodzinsky 1998; Fisher 2003; Kreider 2003; Stolley 1993; U.S. Census Bureau 2001).¹

In this article, we use data from the Early Childhood Longitudinal Study, Kindergarten-First Grade Waves (ECLS-K), the first dataset to provide a workable, nationally representative sample of adoptive families and to include a broad set of parental investments in the formative years of children's development. These data permit a systematic comparison of adoptive parental investments with those by parents from other family structures.² We broadly define parental investment to include the economic, cultural, social, and interactional resources that parents provide for their children. As some parental resources may have the greatest impact during the first few years of schooling, we look at children during their first grade year (Alexander, Entwisle, and Horsey 1997).

The following two questions guide our study:

1. How do resource allocations to children in two-adoptive-parent families compare to those of two-biological-parent families and other alternatively structured families?

¹ The number of adoptive children in the United States is not entirely known due to definitional issues in Census data (Kreider 2003).

² Despite the increase in gay and lesbian couples and single parents who are adopting, the number of these families in most nationally representative datasets is still too small to support statistical analysis (Bachrach, London, and Maza 1991; Fisher 2003; Stolley 1993). Our analyses focus on married male-female couples who adopt.

2. How does the inclusion of sociodemographic factors alter the relationship between adoptive family structure and the allocation of resources to children?

This paper adds to a small but growing sociological literature on adoptive families. Over the past few decades, sociological research has expanded beyond the traditional nuclear family to include a variety of alternative family forms. Still, adoptive families remain understudied by sociologists (Fisher 2003; Wegar 1998). This is not an accident. Limited availability of nationally representative data on adoption undermines the potential for productive sociological research and leaves work on adoption up to other disciplines such as psychiatry, psychology, and social work (Feigelman et al. 1998; Wegar 1997). These studies often rely on clinical populations that are more likely than the general population to exhibit problems, and they implicate the absence of biological ties between parents and children as a source of pathology (Bartholet 1993; March and Miall 2000; Modell 1994; Wegar 1997; for an exception, see Lansford et al. 2001). In this study, we use a nonclinical, nationally representative sample to assess the assumptions that are often present in work on adoptive families.

Our work also follows that of Biblarz and Raftery (1999) in questioning the re-emerging consensus among some social scientists that the traditional, two-biological-parent household is in the best interests of children (for evidence of this consensus, see Amato 2005; Amato and Keith 1991; Case, Lin, and McLanahan 2000, 2001; Popenoe 1993, 1999; Sun 2003).³ The implicit point of much empirical work on single-parent families and stepfamilies concerns “intact” biological families. For example, Amato (2005) asserts that, “The weight of the evidence strongly suggests that growing up without two biological parents in the home increases children’s risk of a variety of cognitive, emotional, and social problems” (emphasis added, p. 85). Scholarship in this vein typically concludes that the absence of a biological parent and/or the presence of a nonbiological parent are linked to

³ Others, however, provide findings that counter or add complexity to the assumed benefits of traditional family structures (Biblarz, Raftery, and Bucur 1997; Case and Paxson 2001; Stacey 1996).

lower levels of resource allocation, educational attainment, and socioeconomic success for children (Astone and McLanahan 1991; Biblarz and Raftery 1993; Case, Lin, and McLanahan 1999; Glenn 1994; McLanahan and Sandefur 1994).

The implications of these conclusions go beyond scholarly debate. Recent court cases regarding same-sex marriage cite this body of research as evidence of the superiority of biological parenthood and, in turn, as a compelling rationale for the current legal definitions of marriage. For example, in *Andersen v. King County* (138 P. 3d 963, 969 [Wash. 2006]), which upheld a state law banning same-sex marriage, Justice Barbara A. Madsen of the Washington Supreme Court held that: "Limiting marriage to opposite-sex couples furthers procreation essential to the survival of the human race, and furthers the well-being of children by encouraging families where children are reared in homes headed by the children's biological parents" (emphasis added; see also *Seymour v. Holcomb* 790 N.Y.S. 2d 858, 864–865 [2006]).

Several theories inform the research emphasizing the importance of biological family structures for children's well-being. A dominant theoretical paradigm in sociological research links alternative family structures to increased stressors that impede family functioning. Other disciplines, and an increasing body of sociological work, rely on theories that highlight evolutionary predispositions. These two theoretical frameworks, which we refer to as *family structure explanations* and *kin selection theory*, are accepted by many as underpinning processes of resource allocation among different family forms. We also discuss alternative explanations that emphasize an environment of evolutionary adaptedness (EEA), compensatory mechanisms

among adoptive parents, and selectivity processes such as the indirect influence of a family's sociodemographic characteristics. By evaluating the degree to which these theoretical perspectives comport with our results, we hope to better understand the processes that may drive parental investment.

BACKGROUND

Below, we review several theoretical approaches that can address the question of how adoptive families' investments in their children differ from the amount and type of investments made by other family types. We summarize the predictions of these theories in Table 1.

FAMILY STRUCTURE EXPLANATIONS

Sociological work on family structure often focuses on the shortcomings of alternative families (for an exception see Stacey 1996). Some of this work is framed explicitly in normative terms. For example, Popenoe (1999) argues, "Based on accumulated social research, there can now be little doubt that successful and well-adjusted children in modern societies are most likely to come from two-parent families consisting of the biological father and mother" (p. 28). Other research comparing two-biological-parent families to step- and single-parent families highlights specific difficulties (e.g., lower levels of parental investment) that are linked to alternative family structures (Dawson 1991; Downey 1994; McLanahan and Sandefur 1994). Despite some disagreement surrounding the parental investments of single mothers, this empirical research typically concludes that children in alternative family types are disadvantaged (Biblarz and Raftery 1999).

Table 1. Summary of Predictions for Levels of Investment by Adoptive Parents

| Theory | Predicted Level of Investment for Two-Adoptive-Parents Versus | |
|-------------------------|--|--------------------------|
| | Two-Biological-Parents | Alternative Family Types |
| Family Structure | Lower | Similar |
| Kin Selection | Lower | Lower |
| EEA | Similar | Similar |
| Compensation | Similar or Greater | Greater |
| Socioeconomic Resources | | |
| <i>Without Controls</i> | Greater | Greater |
| <i>With Controls</i> | Similar or Lower | Similar or Lower |

Family structure explanations suggest that alternative families face increased stressors that decrease the ability of parents to allocate important resources to their children. Stepfamilies, for example, may struggle with what Cherlin (1978) labels "incomplete institutionalization." Along with Furstenburg, he suggests that the departure from a traditional nuclear family can cause ambiguities in how both children and parents should behave (Cherlin and Furstenberg 1994; Furstenberg and Cherlin 1991). Unlike biological parenthood, which is an ascribed status, they note that individuals have to achieve step-parenthood. Without clear rules on what step-parents are supposed to do, what role nonresidential biological parents play, and who counts as a "real" parent, this literature links the structure of stepfamilies to difficulties in family functioning—including lower levels of parental investment (Cherlin and Furstenberg 1994; Thomson, Hanson, and McLanahan 1994).

In the case of adoptive parents, the lack of blood ties to their children may create unique problems. Because the symbolic meaning of blood ties is deeply embedded in American culture, these parents may be especially disadvantaged by their reliance on alternative means of establishing a parent-child relationship (Goffman 1963; Kirk 1981, 1988). Even the language surrounding adoption supports the notion that *real* parents are biological and adoptive relationships are "less powerful, less meaningful, less loving than blood relationships" (Bartholet 1993:167). Some governmental reports also reflect the idea that adoptive families are regarded as inauthentic or nonstandard. The U.S. Census Bureau (2001), for example, explicitly excludes adoptive families from the broad category "traditional nuclear family" ("a family in which a child lives with two married biological parents and with only full siblings if siblings are present" [p. 71]). Adoptive parents also may receive negative feedback from family and friends who question the authenticity of their roles as parents (Miall 1987). With the increasing trend toward openness in adoption, they may also have to define themselves as parents alongside birth parents (Grotevant et al. 2000). Adoptive parents may find themselves suddenly connected to another family with a different culture, ethnic or racial background, or national identity

(Bartholet 1993). Consequently, some adoptive parents may lack a sense of entitlement to their children and have lower levels of self-acceptance as parents (DiGuilio 1988; Kirk 1964).

As with stepfamilies, ambiguities surrounding adoptive parents' roles as parents could create both barriers to and fewer incentives for parental investment. Kirk (1984), Bartholet (1993), and Miall (1987) offer some support for this line of reasoning. They posit that adoptive parents may be handicapped in allocating some forms of social capital to their children. They note that adoptive parents may find it difficult to network with biological parents because they do not share the same cultural experiences of childbirth and childrearing as biological parents. In addition, Sun (2003) suggests that children from nonbiological households (e.g., foster homes) receive low levels of cultural, interactional, and social resources that are comparable to those in other alternative family structures (but see Lansford and colleagues [2001] for a discussion of well-being). These parents are also likely to have fewer economic resources with which to provide for their children. Sun underscores the potential difficulties arising from the absence of a biological mother, most notably the shortage of roles and functions that women often perform.

In sum, sociological family structure explanations suggest that adoptive families, like other alternative families, will face challenges that ultimately reduce the time, effort, and ability of these parents to invest in their children; consequently, adoptive children may have reduced access to many forms of resources. *Therefore, if deviation from a two-biological-parent structure is the key explanatory factor, we would expect that two-adoptive-parent families will invest at lower levels than two-biological-parent families but at similar levels as other alternatively structured families.*

KIN SELECTION THEORY

A shift toward engaging evolutionary theories has come in the wake of concerns about sociology's general inattention to other sciences. Fears that sociology's "biophobia" will lead to academic marginality have stimulated new dialogue between sociology and the biological sciences (Freese, Li, and Wade 2003; Nielsen 1994). The Trivers-Willard hypothesis, which

posits that differences in reproductive potential predispose more advantaged parents to favor their sons and less advantaged parents to favor their daughters, is one such evolutionary tenet that has received recent attention in mainstream sociological journals (Freese and Powell 1999, 2001; Hopcroft 2005; Kanazawa 2001). Although many have weighed in on the usefulness of this particular theory, its core assumptions are transported from another, less-studied evolutionary theory—Hamilton's (1964) theory of kin selection, also known as his theory of inclusive fitness.

Among sociobiologists and other evolutionary theorists, Hamilton's theory of kin selection is "widely regarded as so well established that it is simply assumed to be correct in its general outlines" (Buss 1995:2). This theory explains parental investment as a form of reproductive survival in which parents display "discriminative parenting" (Smith 1988; Trivers 1972). Hamilton notes that altruistic behavior in humans is adaptive when it increases the genetic fitness of individuals. Because parents incur economic, physical, and mental costs in raising a child, they purportedly invest the most in those who have the greatest amount of shared genetic material—their biological children. Evolutionary theories suggest that because unrelated children offer few reproductive benefits to their parents, they are less likely to garner valuable resources and may even suffer mistreatment at the hands of their parents (Daly and Wilson 1996, 1998; Dawkins 1976; Lucas, Creel, and Waser 1996).

The prevalence of stepfamilies—especially those with stepfathers—in part may explain why they are frequently used by evolutionary scholars to investigate the importance of genetic relatedness in parental investments. These studies cover multiple types of parental investments and consistently support kin selection theory: Stepfathers provide less direct care, monetary support, financial aid for continued education, playtime, and homework help to their stepchildren than do biological fathers (Anderson, Kaplan, and Lancaster 1999; Anderson, Kaplan, Lam, and Lancaster 1999; Flinn 1988; Marlowe 1999; Zvoch 1999). In addition, studies connect living with a stepparent to abuse, neglect, and suboptimal growth (Daly and Wilson 1996, 1998; Flinn, Leone, and Quinlan 1999).

Unlike stepfamilies, adoptive families are not confounded by the presence of one biological parent whose inclusive fitness can be maximized through investment in his or her biological child. Salmon (2005), in *The Handbook of Evolutionary Psychology* edited by Buss, contends that "We would expect very little to no investment in an adopted child because they are not genetically related at all. With stepparent situations, at least one parent is the biological parent; in adopted situations there is no biological parent present" (pp. 512–13). *Therefore, if evolutionary predispositions are the overriding principle guiding parental investment, we would expect two-adoptive-parent families to invest less in their children than both two-biological-parent families and other alternatively structured families.*⁴

ENVIRONMENT OF EVOLUTIONARY ADAPTEDNESS (EEA)

Adoption in its current form is sometimes explained as the confusion of evolutionary impulses that once worked in a different context. Some evolutionary psychologists express concerns that many human behaviors are no longer governed by kin selection theory. They argue that the physiological mechanisms developed in early hunting and foraging societies (the EEA for humans) may persist even if they are not adaptive for humans' current environment (Buss 1995; Cosmides and Tooby 1987; Crawford 1998). Mechanisms behind parental investment may respond to cues in the modern environment that actually work against genetic fitness (Kaplan 1996). In the past, humans had fewer resources and often lived in close kin networks. The presence of a genetic stranger was unlike-

⁴ Previous evolutionary work accounts for the existence of adoption as primarily an arrangement among kin (Eberhard 1975; Silk 1980). Yet, as Salmon notes in the case of relative adoption, evolutionary predispositions still result in "a lesser degree of parental investment than in an individual's own biological child" (2005:512). Thus, according to kin selection theory, even if adoptive children are relatives, two-adoptive-parent families will still invest less than families with a biological parent. Later, we discuss results from supplementary analyses in which we use inferential techniques to distinguish between relative and nonrelative adoptions in our data.

ly. Now, however, humans' "innate psychological predispositions that promote an intense desire for children" may "permit the formation of close relationships with infants and children of strangers" (Silk 1990:39). These underlying mechanisms may actually (if accidentally) facilitate adoption. As a result of these evolutionary blunders, adoptive parents may invest as if their children were their own biological sons and daughters.

Evolutionary scholars sometimes use the EEA to explain results contradictory to kin selection theory (Hrdy 2000). Judge and Hrdy (1992), for example, suggest that adoption as a practice among unrelated individuals has "neither historical nor evolutionary underpinnings" (p. 519) to account for some archival evidence that adoptive and biological parents bequeathed the same amount to their children. They imply that the current context in which adoption occurs is so new that evolutionary predispositions have not yet caught up, leaving adoptive parents vulnerable to intrinsic desires for children that once served them well. Evolutionary psychologists, however, typically do not apply the EEA to stepfamily research that tends to support kin selection theory. Thus, the EEA appears on a practice-to-practice basis rather than detailing the specific conditions under which it is relevant; this inconsistent use makes it difficult to falsify the theory and limits its explanatory utility. Arguably, today's stepfamilies (and all family forms in the United States) are influenced by a social context that is new by evolutionary standards—one in which the institution of marriage and a postindustrial world shape family relations (Cherlin 2005; Hartog 2000; Kaplan 1996). Logically, if applied uniformly, the EEA implies that a love for children influences all parents—not just adoptive ones. *Therefore, if the EEA is the main explanatory factor, we would expect no differences in the levels of investment by two-adoptive-parent families, two-biological-parent families, and other alternatively structured families.*

COMPENSATION THEORY

Although sociological arguments about alternative family structures suggest that challenges to adoptive parents' fitness as parents should result in lower levels of resource allocation, some scholars note that adoptive parents may

step up to overcome these challenges. The pressure that adoptive parents face to "prove" themselves may cause them to increase their efforts in fulfilling all of the requirements of "good parents" (Hartman and Laird 1990). These efforts are expected to cancel out the potential negative effects of stigma and decreased self-acceptance as parents, leading adoptive families to act much like two-biological-parent families.

Some scholars contend that although adoptive families encounter unique barriers to family functioning, they also have particular psychological and social strengths (Cohen, Coyne, and Duvall 1993; Lansford et al. 2001). For example, Kirk (1984) suggests that adoptive parents often have intensified commitments to creating an ideal family—particularly if their path to parenthood is long and costly. Adoptive parents also may have a more positive view of their children and experiences as parents (Priel et al. 2000). Lending support to compensation theories, these strengths tend to coexist with low self-evaluations of parenting ability that may reflect feelings of ambivalence, doubt, and guilt surrounding adoptive parenthood (Priel et al. 2000; Verhulst, Althaus, and Versluis-Den Bieman 1990).

Literature and media coverage of problems adoptive children face may also prime adoptive parents to see and respond to signs of their children struggling (Miall 1996; Priel et al. 2000; Waggenspack 1998). Indeed, adoptive parents may feel the need to react to the negative effects of children's experiences prior to adoption, including nutritional deficiencies, prenatal exposure to drugs and alcohol, genetic inheritance of psychological disorders, abuse, long-term institutionalization, and stress, for which adoptive children are at a greater risk (Frank et al. 1996; Verhulst et al. 1990; Yates et al. 1998). They may devote time and resources to their children in the hope of negating real or perceived barriers to their children's success.

Adoptive parents are a unique group, consciously selecting into the parent role without the accompanying spousal role, as in the case of stepparents. Yet, given the differing motivators behind adoption (e.g., infertility, altruism, contact with foster children), there is likely much variation in initial feelings toward parenthood among adopters. What many adoptive parents do share is some sort of screening and waiting process. As Rothman (2005) suggests,

the seemingly endless planning stage for many adoptive parents only heightens their eagerness to begin parenting. As many adoptive parents may have first struggled with infertility before considering adoption, several years of anticipating parenthood may transpire before even beginning the adoptive process. By the end of the disappointments, efforts, and paperwork, the remaining prospective adoptive parents may be inclined to invest heavily in the parenting role.

Theories that highlight compensatory mechanisms in adoptive families suggest that the unique stressors placed on adoptive parents will motivate them to prove themselves as ideal parents. These efforts are predicted to result in levels of investment that do not reflect their initial disadvantages. Some empirical work indicates adoptive parents' efforts may even result in a slight advantage over two-biological-parent families. Case and Paxson (2001), for example, report that adoptive parents are more likely than other parents to make investments in their children's health. *Thus, if compensatory mechanisms among adoptive parents guide their investment, we would expect two-adoptive-parent families to allocate more resources to their children than other alternatively structured families. Adoptive parents' compensatory efforts are also expected to close and potentially exceed gaps between their levels of parental investment and those of two-biological-parent families.*

SOCIOECONOMIC EXPLANATIONS

Differences between family structures may be a function of selection on sociodemographic characteristics such as parental income and education (McLanahan 1985). Koch (2006), for example, finds that parents' socioeconomic resources can account for variation in discipline practices among biological and nonbiological family structures. A longstanding tradition of sociological work links parents' involvement with their children to higher levels of education and income (Blau and Duncan 1967; Muller 1993). Scholars also identify older parental age as a resource that facilitates investments in children (Powell, Steelman, and Carini 2006). Parents with these additional resources spend more for their children's education, involve children in extracurricular activities,

take more time for school involvement, and dedicate more time to activities with their children. Because these characteristics also vary with family structure, they may explain what appear to be the effects of family type.

Adoptive couples are heavily selected on their ability to invest time and money in the adoption process, which makes adoption a largely middle and upper class phenomenon. Adoptive parents typically have higher levels of education and income and are older than the general population (Bachrach et al. 1991; Fisher 2003; Stolley 1993). *Therefore, if family structure effects operate through sociodemographic characteristics, we would expect two-adoptive-parent families to invest more in their children than all other family types; however, the introduction of controls for parental income, education, and maternal age will negate or even reverse this advantage.*

In what follows, we present analyses that can directly address the theories discussed above. We assess the generalizability of explanations built from work on step- and single-parent families by holding constant the key explanatory feature—the lack of normative, biological ties—but varying the family context in which it occurs. Adoptive families in which *both* biological parents are absent are instructive in determining if alternative family structure (in the case of family structure explanations) or genetic nonrelatedness (in the case of kin selection theory) inevitably results in parents' reduced allocation of resources. Alternatives to these two explanations—the environment of evolutionary adaptedness (EEA), compensation theory, and socioeconomic differences between adoptive and nonadoptive families—also will be explored. Our goal is not to determine which single theory accounts for our findings. Indeed, some of these theories are not mutually exclusive. Instead, we seek to establish which theories' predictions are most (and least) consistent with these analyses.

DATA, MEASURES, AND METHODS

DATA

Our analyses rely on data from the Early Childhood Longitudinal Study, Kindergarten-First Grade Waves, 1998–2000 (ECLS-K). ECLS-K is the most comprehensive national dataset to focus on the experiences of children

and youth and provide detailed information on family resource allocations to young children. Unlike most other national datasets, the ECLS-K is well-suited to study adoptive families as it includes a workable sample of adoptive families that can be clearly distinguished.⁵ We use the longitudinal data through kindergarten and first grade to establish consistent and accurate measures for family structure. All outcome measures are from the first grade year, Spring 2000.⁶ As we use multiple imputations for missing values in the control variables, our sample sizes—ranging from 12,950 to 13,899—only differ by missing values in the outcome variables.

MEASURES OF INDEPENDENT AND DEPENDENT VARIABLES

ADOPTIVE FAMILY STRUCTURE. In ECLS-K, parental respondents complete a household roster that identifies the relationship of each household member to the focal child. We use these rosters to construct a series of parent types: two adoptive parents ($N = 161$), two biological parents ($N = 9,661$), biological mother and other father ($N = 881$), biological father and other mother ($N = 84$), biological mother only ($N = 2,410$), biological father only ($N = 189$), relat-

ed guardians ($N = 243$), and unrelated guardians ($N = 96$). These typologies rely on those cases in which family types are consistent across both years. This method reduces the measurement errors associated with assessing family status at a single point in time.⁷

Throughout the main analyses, two-adoptive-parent families are the reference category against which other family structures are compared. Because they include a biological parent, families in which stepparents adopt their stepchildren are included in the appropriate biological-parent/other-parent category. Unfortunately, our data do not unambiguously allow us to distinguish nonrelative and relative adoptions (e.g., grandparents adopting their grandchildren). Many relative adoptions are captured in the household roster when respondents note their relation to the focal child; however, some relative adopters may designate themselves as adoptive mothers or fathers instead of noting their blood relationship. We use inferential techniques in supplementary analyses that allow us with some confidence to discriminate between related and nonrelated adoptions. These results are discussed later.

PARENTAL RESOURCES/INVESTMENTS. We analyze 13 dependent variables measuring four different types of parental resource allocation: economic, cultural, interactional, and social capital. Acknowledging that the categories above are not mutually exclusive, we use the following as indicators of economic resource allocation: 1) number of the child's books, 2) presence of a computer in the home for the child to use, and 3) attendance in a private school. We designate these as economic resources because they primarily require the purchase of a good or service. Cultural resources are those in which parents engage children in particular skill-building exercises. These include:

⁵ ECLS-K provides information on each parent's relationship to the child, allowing us to distinguish between children in stepfamilies with one adoptive parent and two-adoptive-parent families. In our primary analyses, biological-parent/adoptive-parent households are pooled with other stepparent households. Supplementary analyses in which these households are not pooled suggest that the models presented in this paper may underestimate the differences between adoptive families and stepfamilies.

⁶ Given the wide range of indicators of parental resources available in the various waves of ECLS-K, we conduct additional analyses to see if our conclusions also hold across different measures and different years. For example, we analyzed the 12 measures of educational investments in children's kindergarten years that Cheng and Powell use (forthcoming). Regardless of the set of measures used in a series of supplementary analyses, or how we code these measures, the patterns reported in our paper remain the same.

⁷ 622 families report inconsistent family types between kindergarten and first grade. Our decision to exclude inconsistent cases from the number of adoptive families (and other family types) may slightly underestimate the differences between them. Indeed, alternative analyses in which we loosen the sample restrictions yield similar and, in some cases, even stronger results.

Table 2. Dependent Variables, ECLS-K Longitudinal Kindergarten-First Grade, 1998–2000

| Variables/Coding | Description |
|---|---|
| Economic Resources | |
| <i>Number of child's books</i> | How many children's books does child have in your home now? |
| <i>Child has a home computer (1 = yes)</i> | Do you have a home computer that child uses? |
| <i>Private school (1 = yes)</i> | Child enrolled in a private school? |
| Cultural Resources | |
| <i>Reading-related activities</i> (z score; $a = .55$) | In a typical week, how often do you or any other family member: 1) Read books to child? 2) Tell stories to child? |
| <i>Math-related activities</i> (1 = never; 4 = everyday) | Practice reading or working with numbers? |
| <i>Other cultural activities</i> (z score; $a = .82$) | 1) Play games or do puzzles with child? 2) Help child to do arts and crafts? 3) Talk about nature or do science projects with child? 4) Build something or play with construction toys with child? 5) Play a sport or exercise together? |
| <i>Number of extracurricular activities</i> | Outside of school hours, has child ever participated in: 1) dance lessons, 2) music lessons, 3) art classes or lessons, 4) organized performing arts programs, 5) organized athletic activities, 6) organized clubs or recreational programs? |
| Interactional Resources | |
| <i>Assistance with schoolwork</i> (1 = never; 5 = 5 or more times a week) | During this school year, how often did you help child with homework? |
| <i>Talk with child</i> (z score; $a = .51$) | I encourage child to: 1) talk about troubles, 2) tell me about friends and activities, 3) express opinions. 4) Even if I am really busy, I make time to listen to child. |
| <i>Number of meals with child</i> | The number of days per week: 1) Your family eats the evening meal together. 2) At least some of the family eats breakfast together. |
| Social Capital Resources | |
| <i>Number of parents talk with regularly</i> <i>Parental school involvement</i> (z score; $a = .60$) | How many parents of children in child's class do you talk with? Since the beginning of the school year, have you or your spouse: 1) attended an open house, 2) attended a PTA meeting, 3) gone to a regularly-scheduled, parent-teacher conference, 4) attended a school or class event, 5) acted as a volunteer at the school or served on a committee, 6) participated in fundraising for child's school? |
| <i>Religious involvement</i> (1 = never; 5 = several times a week) | How often did you attend religious services in the past year? |

Note: All outcome measures are taken from the Spring 2000 survey of ECLS-K Longitudinal Kindergarten-First Grade, 1998–2000.

1) reading-related activities, 2) math-related activities, 3) other cultural activities, and 4) number of extracurricular activities. Interactional resources primarily involve semi- or unfocused parental interaction with children. These include: 1) assistance with schoolwork, 2) talking with the child, and 3) number of meals eaten with the child. Finally, social capital resources mainly have the potential to extend or strengthen children's social networks. We measure these through: 1) number of other children's parents that the child's parents talk with regularly, 2) parents' involvement in the school, and 3) religious involvement. Table 2 presents descriptions of these items and other variables.

Parents provide resources in diverse ways and across a large range of domains. Our measures, therefore, cannot cover all of the resources that parents may allocate to their children. Parental investment includes intangibles such as love, support, and devotion—elements that are difficult to quantify. Indeed, these are beyond the scope of our paper. Our measures, however, have been used in prior research on parental investment and reflect typologies of resources that are well-established in the sociological literature as affecting educational attainment and other status outcomes (Cheng and Powell forthcoming; Coleman 1988; DiMaggio 1982; Downey 1994; Powell et al. 2006; Roscigno

Table 3. Sociodemographic Characteristics by Family Type

| | Adoptive Families | Biological Families | Biological Mother, Other Father | Biological Father, Other Mother | Biological Mother Only | Biological Father Only ^a |
|------------------------------------|-------------------|---------------------|---------------------------------|---------------------------------|------------------------|-------------------------------------|
| Sample size | 161 | 9,661 | 881 | 84 | 2,410 | 189 |
| Annual family income (\$10,000s) | 8.12 | 6.32** | 4.17** | 5.38** | 2.60** | 4.12** |
| Highest parental education (years) | 15.41 | 14.30** | 13.35** | 13.80** | 12.51** | 12.80** |
| Mother's age | 41.81 | 33.79** | 28.45** | 27.97** | 30.56** | 33.86** |
| Mother's race | | | | | | |
| White | .78 | .68** | .68** | .65 | .40** | .67 |
| African American | .12 | .08† | .11 | .06 | .39** | .12 |
| Hispanic | .06 | .18** | .17** | .04 | .17** | .16** |
| Other race | .02 | .06** | .04 | .01 | .05† | .05 |
| Missing | .01 | .00 | .00 | .22** | .00 | .00** |
| Female child | .48 | .48 | .48 | .49 | .49 | .42 |
| Child's race | | | | | | |
| White | .53 | .66** | .64* | .67* | .35** | .67** |
| African American | .16 | .08** | .11 | .14 | .39** | .11 |
| Hispanic | .17 | .19 | .19 | .08† | .18 | .16 |
| Other race | .15 | .07* | .06** | .11 | .07** | .06** |
| Child with disabilities | .25 | .14** | .18† | .15† | .16* | .24 |
| Sibship size | 2.49 | 2.61 | 2.44 | 2.37 | 2.40 | 1.86** |

Data source: ECLS-K Longitudinal Kindergarten-First Grade, 1998–2000. *Note:* Analyses are weighted. Test significance indicates differences between the designated family type and adoptive families.

^aMother's race and age are substituted by father's race and age.

† $p < .10$; * $p < .05$; ** $p < .01$ (two-tailed tests).

and Ainsworth-Darnell 1999; Schneider and Coleman 1993).⁸ Additionally, while parental investment is often a lifelong process, we look at what others define as a critical period in a child's life—the first grade year. Investments during this time greatly influence later educational success (Alexander et al. 1997).⁹

⁸ Although sociologists studying parental transmission of resources often focus on items similar to those studied here, Hopcroft (2005) suggests that educational attainment offers a superior proxy. Her argument, however, conflates actual parental resources and their possible consequences (e.g., educational attainment). Moreover, for her argument to be consistent, then most of the studies in evolutionary theory that she lauds—which typically use measures of parental resources other than educational attainment—also would need to be discounted. In addition, although Hopcroft questions whether there is much variation in parental investments in young children, most studies suggest otherwise (Bianchi et al. 2004; Cheng and Powell forthcoming; Lareau 2003).

⁹ By focusing on young children, we exclude fam-

SOCIODEMOGRAPHIC CONTROLS. In the analyses of each dependent variable, we include a number of control variables that allow us to assess the extent to which differences in parental investment and other family structures are due to family background. Table 3 provides the summary statistics for each of these sociodemographic controls by family type.

As Table 3 indicates, two-adoptive-parent families have significantly higher annual family income and levels of parental education than all other family types.¹⁰ We also find that adop-

ties that adopt older children from the sample. Despite the absence of authoritative evidence on the age of adoption in the United States, most evidence strongly suggests that the majority of adoptions occur with young children (but see Fisher 2003). Preliminary analyses of the 2002 wave of the Education Longitudinal Study are highly suggestive that the patterns presented here extend beyond early childhood and into adolescence.

¹⁰ Supplementary analyses that include maternal employment as a control or alternative codings of parental education (e.g., dichotomous variables that

tive mothers are typically older than other mothers and more likely to be white than biological mothers.¹¹ Sibship size may also affect the amount of resources parents provide for each child, thus influencing children's educational achievement (Blake 1989; Downey 1995; Steelman and Powell 1989). In our data, however, the adoptive families significantly differ in sibship size only from single-father families. These differences between adoptive families and biological family types reflect those found in other national surveys (Bachrach et al. 1991; Fisher 2003; Stolley 1993).

Because characteristics of a child also may affect levels of investment by parents, we include controls for a child's gender, race, and disability. With the exception of children from single-mother families, adoptive children are less likely to be white. They are also more likely to fall into the "other race" category than children from most family types. These racial characteristics likely reflect the increase in international adoption (Fisher 2003). Consistent with earlier research, we find that adoptive children are more likely to have disabilities than other children (Verhulst et al. 1990).¹² Children with disabilities may require more parental time, money, and effort.

ANALYTICAL STRATEGIES AND STATISTICAL MODELS

We begin with simple bivariate models in which resources are regressed on family structure. Depending on the type of resource analyzed, we use OLS, binary logit, ordinal logit, and Poisson regression. In the second stage of analyses, we add the sociodemographic controls to the initial models. As discussed earlier, differences in

allowed us to distinguish between levels of educational degree) do not affect the overall findings.

¹¹ We use mother's age and race because there are fewer missing cases than for father's age and race (although for single-father families, we use father's age and race because information regarding the mother is not provided). Analyses using father's age and race when possible produce results very similar to those shown here.

¹² Models that exclude controls for a child's characteristics (i.e., race, gender, and physical disability) yield patterns consistent with the multivariate models presented in the tables.

parental investment by family structure may actually be explained by factors such as family income, highest level of parental education, mother's age, mother's race, number of siblings, whether or not a child has a disability, child's gender, and child's race. By including these controls, we can assess the relationship between adoptive family structure and resource allocation net of sociodemographic characteristics. We incorporate school clusters in each analysis.

RESULTS

ADOPTIVE FAMILY STRUCTURE AND PARENTAL RESOURCES: AN ILLUSTRATION

As an illustration, Table 4 presents the general effects of adoptive family structure on parental resource allocation for two dependent variables: parent's involvement in the school (attending an open house, attending a meeting of a parent-teacher student organization, going to a parent-teacher conference, attending a school or class event, acting as a volunteer, and participating in fundraising) and the number of child's books. In Model 1, we see that the difference between two-adoptive-parent families (the reference group) and two-biological-parent families is statistically significant, with adoptive parents being more involved in their children's schools ($b = -.15, p < .05$). Adoptive parents also show significantly higher levels of involvement than parents from all other alternative family types ($p < .01$). As shown in Model 2, some of this disparity is due to sociodemographic characteristics such as income and education. With the addition of these controls, we find that adoptive and biological parents participate equally in their children's schools. However, sociodemographic characteristics alone cannot account for all of the differences between adoptive parents and parents from other alternative family structures; adoptive parents remain significantly more involved than parents from all other family types except for biological father/other mother ($p < .01$).

Number of child's books suggests a similar story. At the bivariate level (Model 1), adoptive children have significantly more books than do children from two-biological-parent families ($b = -24.61, p < .10$) and all other family types ($p < .01$). This relationship is due, in part, to the sociodemographic factors added in Model 2. Although the direction of the coefficients

Table 4. Linear Regression Coefficients for Parental Investment on Family Type, Selected Items

| | Parental School Involvement | | | | Number of Child's Books | | | |
|---------------------------------|------------------------------|---------|---------------------------|---------|------------------------------|-----------|---------------------------|----------|
| | Model 1: Without Controls | | Model 2: With Controls | | Model 1: Without Controls | | Model 2: With Controls | |
| | B | SE | B | SE | B | SE | B | SE |
| Biological families | -.15 | (.07)* | .00 | (.07) | -24.61 | (13.16)† | -11.33 | (13.19) |
| Biological mother, other father | -.54 | (.08)** | -.20 | (.08)** | -47.97 | (13.66)** | -17.05 | (13.89) |
| Biological father, other mother | -.41 | (.13)** | -.10 | (.12) | -62.64 | (15.98)** | -33.61 | (16.03)* |
| Biological mother only | -.69 | (.07)** | -.20 | (.07)** | -71.69 | (13.10)** | -18.13 | (13.31) |
| Biological father only | -.67 | (.11)** | -.36 | (.10)** | -59.49 | (15.56)** | -27.72 | (15.72)† |
| Annual family income | | | .03 | (.00)** | | | 1.82 | (.41)** |
| Highest parental education | | | .07 | (.00)** | | | 6.40 | (.54)** |
| Mother's age | | | .01 | (.00)** | | | .78 | (.20)** |
| African American mother | | | -.01 | (.08) | | | -37.90 | (6.49)** |
| Hispanic mother | | | -.15 | (.05)** | | | -37.43 | (5.95)** |
| Other-race mother | | | -.25 | (.05)** | | | -28.39 | (9.70)** |
| Mother race missing | | | -.27 | (.12)* | | | -43.97 | (8.69)** |
| Female child | | | .05 | (.02)** | | | 6.87 | (2.48)† |
| African American child | | | -.27 | (.08)** | | | -25.10 | (6.59)** |
| Hispanic child | | | -.04 | (.05) | | | -19.51 | (5.93)** |
| Other-race child | | | -.20 | (.05)** | | | -20.31 | (8.14)* |
| Child with disabilities | | | -.05 | (.02)† | | | 1.10 | (4.59) |
| Sibship size | | | -.05 | (.01)** | | | 1.86 | (1.41)† |
| Constant | | .33 | | -1.07 | | 141.31 | | 3.98 |
| R ² | | .06 | | .20 | | .02 | | .09 |
| N | | 13,378 | | 13,378 | | 13,310 | | 13,310 |

Data source: ECLS-K Longitudinal Kindergarten-First Grade, 1998-2000. *Note:* In each model, adoptive families are the reference group. Results for families with inconsistent parental structures in '98 and '99 and households headed by related guardians or unrelated guardians are available in the Online Supplement on the ASR Web site. Robust standard errors are in parentheses.

† $p < .10$; * $p < .05$; ** $p < .01$ (two-tailed tests).

remains negative across all family structures, adopted children are only significantly more likely to own a greater number of books than children from families without a biological mother (e.g., biological father/other mother [$b = -33.61, p < .05$] and biological father only [$b = -27.72, p < .10$]).

For both variables, we find that sociodemographic characteristics operate as expected. Family income, parental education, and mother's age all significantly increase the number of child's books and parental school involvement ($p < .01$). Race also plays a role. White children and children with white mothers have significantly higher levels of investment on both measures. Children with disabilities have slightly lower levels of parental involvement in school. Supplementary analyses of the subcomponents of our measure of parental involvement reveal that this is due to disabled parents' lower attendance at school activities—which in turn can be attributed to the lower likelihood that disabled

children take part in school activities such as plays, sports, or science fairs. Finally, having more siblings decreases parental involvement in school but marginally increases the number of child's books. The positive effect on books is likely an accumulative one: children with more siblings may have hand-me-down books as well as those purchased specifically for them.

ADOPTIVE FAMILIES AND BIOLOGICAL FAMILIES

Table 4 suggests that the advantages of two-adoptive-parent families as compared to two-biological-parent families are due to sociodemographic characteristics such as income and education. We now turn to Table 5 to assess if this trend holds across all of the 13 resources analyzed. We group these resources by type—economic, cultural, interactional, and social capital. Detailed analyses of these variables are available in the Online Supplement on

Table 5. Coefficients from General Linear Regression of Parental Investment on Family Type

| Parental Investment | Biological Families | | Biological Mother, Other Father | | Biological Father, Other Mother | | Biological Mother Only | | Biological Father Only | |
|--|---------------------|---------------|---------------------------------|---------------|---------------------------------|---------------|------------------------|---------------|------------------------|---------------|
| | Without Controls | With Controls | Without Controls | With Controls | Without Controls | With Controls | Without Controls | With Controls | Without Controls | With Controls |
| Economic Resources | | | | | | | | | | |
| Number of child's books ^a | -24.61† | -11.33 | -47.97** | -17.05 | -62.64** | -33.61* | -71.69** | -18.13 | -59.49** | -27.72† |
| Child has a home computer ^b | -.80** | -.45† | -1.68** | -.90** | -1.44** | -.85* | -2.12** | -.83** | -1.49** | -.64* |
| Private school ^b | -.27 | .11 | -1.09** | -.23 | -1.81** | -1.11* | -1.13** | -.10 | -.76** | -.08 |
| Cultural Resources | | | | | | | | | | |
| Reading-related activities ^a | -.11 | -.09 | -.18* | -.14† | -.39** | -.34* | -.20** | -.11 | -.31** | -.27* |
| Math-related activities ^c | -.20 | -.19 | -.10 | -.15 | -.28 | -.35 | -.07 | -.16 | -.43* | -.42* |
| Other cultural activities ^a | -.12 | -.14† | -.12 | -.17* | -.18 | -.27† | -.12 | -.14† | -.05 | -.06 |
| Number of extracurricular activities ^d | -.23** | -.07 | -.58** | -.24** | -.54** | -.26* | -.58** | -.13* | -.70** | -.37** |
| Interactional Resources | | | | | | | | | | |
| Assistance with schoolwork ^c | -.08 | -.08 | -.13 | -.24 | -.21 | -.30 | .02 | -.23 | -.21 | -.35† |
| Talk with child ^a | -.05 | -.06 | -.08 | -.10 | .01 | -.05 | .01 | -.06 | .04 | .02 |
| Number of meals with child ^a | -.49† | -.51† | -1.09** | -.84** | -.47 | -.25 | -1.37** | -.62** | -.60† | -.06** |
| Social Capital Resources | | | | | | | | | | |
| Number of parents talk with regularly ^a | .31 | .66** | -.99** | -.09 | -.74† | .06 | -.91** | .34 | -.57 | .22 |
| Parental school involvement ^a | -.15* | .00 | -.54** | -.20** | -.41** | -.10 | -.69** | -.20** | -.67** | -.36** |
| Religious involvement ^c | -.43** | -.30 | -1.03** | -.76** | -1.05** | -.69* | -.79** | -.69** | -.88** | -.63** |

Data source: ECLS-K Longitudinal Kindergarten-First Grade, 1998-2000. *Note:* Adoptive families are the reference group in each model. Regression coefficients and test significance indicate differences between the designated family type and adoptive families. As a result of missing values in outcomes variables, sample sizes range from 12,950 to 13,899. "With controls" analyses also include familial income, highest parental education, maternal race, child's gender, child's race, child disability, and sibship size. Full models with results for families with inconsistent parental structures in '98 and '99 and households headed by related guardians or unrelated guardians are available in the Online Supplement on the *ASR* Web site. ^aLinear regression. ^bBinary logit regression. ^cOrdinal logit regression. ^dPoisson regression. † $p < .10$; * $p < .05$; ** $p < .01$ (two-tailed tests).

the ASR Web site: <http://www2.asanet.org/journals/asr/2007/toc055.html>.

At the bivariate level, we see a positive relationship between being in a two-adoptive-parent family and receiving several parental resources. Two-adoptive-parent families (the reference group) are significantly more likely than two-biological-parent families to have more books for their children, have a home computer for their children's use, involve their children in extracurricular activities, eat meals with their children, involve themselves in their children's schools, and attend religious services with their children. The inclusion of sociodemographic controls weakens or accounts for most of these relationships.

There are a few exceptions to this pattern. First, with the addition of controls, the number of other cultural activities becomes marginally significant—suggesting that adoptive parents are more likely than biological parents to engage in activities such as playing games, building things, and exercising with their children ($b = -.14, p < .10$). This is likely the effect of controlling for maternal age. As Table 3 indicates, adoptive mothers are on average 8 to 13 years older than other parents. While research links increasing maternal age to the greater provision of resources for adolescents, some of the more hands-on activities with younger children may demand levels of physical stamina and energy better suited for younger parents (Juster 1985; Powell et al. 2006; Walter 1986). Our analyses support this claim. Maternal age has a significant negative effect for the three hands-on cultural activities (reading, math, and other) but a significant positive effect on many other resources. In fact, for the physically demanding "other" cultural activities, controlling for the older age of adoptive mothers slightly increases the adoptive advantage over biological parents.

One resource, however, shows the opposite pattern when we include controls. Adoptive parents are slightly less likely to talk with parents of other children than are biological parents ($b = .66, p < .10$). The increase in the coefficient from the bivariate model is due mostly to the effects of education, income, and maternal age, which apparently trump the countervailing influence of having a disabled child. This finding lends support to the argument that adoptive par-

ents may be particularly handicapped in providing some forms of social capital for their children. Specifically, they may feel alienated from other parents because of their different child-rearing experiences (Bartholet 1993; Kirk 1984; Miall 1987), or they may face difficulties in entering the social circles of biological parents.

These findings suggest that adoptive parents' greater levels of parental investment as compared to biological parents are largely due to their higher income, greater education, and older maternal age. With the addition of these controls, nonetheless, they sustain a marginally significant advantage in providing home computers for their children's use, engaging their children in "other" cultural activities, and eating meals with their children. They also are significantly more likely to take their children to religious services. These advantages span the four types of resources. Adoptive parents, however, face unique barriers to acquiring one form of social capital—contacts with other parents. Overall, however, the full models reveal that adoptive parents are more similar to biological parents in terms of resource allocation than they are to parents from any other family structure.¹³

ADOPTIVE FAMILIES AND OTHER ALTERNATIVE FAMILIES

When compared to other alternative family structures, adoptive families show a generally higher level of parental investment at the bivariate level. Two-adoptive-parent families are significantly more likely than are other family forms to have more books for their children, provide a home computer for their children's use, send their children to private schools, engage in reading activities with their children, involve

¹³ Evolutionary theory strongly suggests that closeness to grandparents, a form of social capital, is linked to kin selection processes (Littlefield and Rushton 1986); however, this variable is not available in the first grade wave. Supplementary analyses of the kindergarten wave show that at the bivariate level children from adoptive families have fewer close grandparents than do children from two-biological-parent families. Yet, a control for maternal age completely accounts for the differences. These findings run counter to the predictions of kin selection theory.

their children in extracurricular activities, involve themselves in their children's schools, and attend religious services with their children. Adoptive parents are also more likely to eat meals with their children than are other alternative family types except for biological-father/other-mother families, and they are more likely to talk with other children's parents than all alternative family types except for biological fathers. Additionally, they are more likely than single fathers to do math-related activities.

With the addition of controls, these relationships weaken, yet the adoptive advantage remains. Adoptive families still show higher levels of investment than do at least some alternative family structures for 11 of the 13 resources, and they are significantly more likely than all alternative family types to provide these three resources for their children: a home computer for their use, involvement in extracurricular activities, and attendance at religious services. Sociodemographic controls have the most explanatory power for economic and cultural resources that depend heavily on parental income and education. They do a less effective job accounting for differences in several social capital resources that involve primarily time and motivation. Interestingly, with one exception (meals with children), all family types vary little in the interactional resources they provide. It may be that most parents recognize interaction with their children as a low cost but highly rewarding investment.

These findings suggest that while adoptive parents' sociodemographic characteristics allow them to allocate more resources to their children than can parents from all other alternative family structures, their greater levels of investment are also due in part to the unique structure of the adoptive family. We find that the addition of sociodemographic controls cannot completely account for the advantage that adoptive parents have over other alternative family structures. In this regard, two-adoptive-parent families are similar to two-biological-parent families. As past research indicates, two-biological-parent families tend to allocate more resources to their children than do parents from some alternative family structures (Biblarz and Raftery 1999; Dawson 1991; Downey 1994; McLanahan and Sandefur 1994). Like biological families, adop-

tive families appear to be advantaged by their family structure.¹⁴

DISCUSSION

Several predominant social scientific theories predict that the absence of biological parents or the presence of a nonbiological parent is detrimental to the normative functioning of families and the well-being of children. This prediction has public policy implications: recent court decisions rely in part on the presumed irreplaceable bond between biological parents and their children to uphold the constitutionality of laws banning same-sex marriage. Nearly all of the research supporting this claim, however, refers to differences between two-biological-parent and step- or single-parent families. Here, we demonstrate that the absence of a biological tie between parents and their children does not unequivocally constitute a disadvantage in at least one key family process—the allocation of resources to young children. We find that the two-adoptive-parent family structure is remarkably similar to the two-biological-parent family structure in that it provides adoptive children an *advantage* over children in other alternative family structures.

Our analyses indicate that adoptive parents allocate more economic, cultural, social, and interactional resources to their children than do parents in all other family types. Their high levels of investment are due, in part, to their greater levels of income, education, and older maternal age. When these sociodemographic character-

¹⁴ In ancillary analyses, we use inferential techniques to distinguish between likely nonrelative and likely relative adoptions (details available from the authors). Multivariate analyses indicate that the general patterns reported in this paper hold for the probable nonrelative-adoptive subsample (which constitutes approximately three-quarters of the adoptive families in ECLS-K). Parental investments of the probable relative-adoptive subsample are generally lower than those of the nonrelative adoptive subsample; however, the small size of the former group renders statistical tests insignificant. In other words, our inclusion of all adoptive-two-parent households in this article offers a conservative estimate of differences between biological and nonbiological families.

istics are controlled for, an adoptive advantage still remains. Two-adoptive-parent families invest as much and, in some cases of marginal significance, more in their children than do two-biological-parent families, holding all else equal. The adoptive advantage becomes more apparent in comparison with children from other alternative family types. Net of sociodemographic characteristics, adoptive families invest significantly more than at least one alternative family type for most resources included in our analyses. Regardless of the family types to which they are compared, two-adoptive-parents' higher levels of investment are spread across all four types of resources.

There is one exception to the pattern described above. Models that include sociodemographic controls indicate that adoptive parents are significantly less likely than biological parents to talk regularly with the parents of other children. This finding supports prior research by Kirk (1984), Bartholet (1993), and Miall (1987) that highlights the cultural importance assigned to a particular parenthood experience: adoptive parents may lack experiences with their children's birth and early months/years that make bonding with other parents difficult. Additionally, they may be less likely to identify talking with other parents as something that directly helps their children. Thus, they may not direct the same level of effort to this specific resource.

Earlier, we presented several theoretical perspectives that could address the question of how two-adoptive-parent families' resource allocations to their children compare to those of other families. These analyses generally are consistent with socioeconomic explanations and compensation theory. Adoptive parents' higher levels of income and education, and their advanced age, increase the level in which they invest in their children. However, these factors facilitate adoptive parental investment but cannot explain the advantage that remains over other alternative family structures with the inclusion of sociodemographic controls. Compensation theory suggests that a social context favoring biological parenthood will disadvantage adoptive parents but they will overcome this obstacle as they work toward becoming ideal parents. Their efforts should mitigate factors that might otherwise reduce levels of parental investment. As a result, two-adoptive-parent families will invest

in their children at the same or higher levels as two-biological-parent families and at a higher level than do all other alternatively structured families, net of all socioeconomic resources.

Compensation theory reveals an interesting paradox. Individuals who are not granted the title of "parent" via biology may actually fulfill (and even exceed) the accompanying expectations better than those who have been accorded this title. Research on adoption suggests that three potential factors may combine to create this effect. First, the primacy of genetic ties in American society may create a social climate in which adoptive family structures are devalued (Lebner 2000; Miall 1987; Nelkin and Lindee 1995; Weegar 2000). The stigma surrounding their family form may cause many adoptive parents to struggle with presenting themselves as "real" parents (Bartholet 1993; March 1997; Ward 1981). Second, adoptive parents are likely to encounter and incorporate the belief that adoptive children will face intellectual, social, and emotional difficulties growing up (National Adoption Attitudes Survey 2002; Priel et al. 2000; Verhulst et al. 1990; Waggenpack 1998). Sensitivity to their children's real or perceived needs may lead adoptive parents to allocate resources to allay such difficulties and absolve themselves of any blame. Finally, adoptive parents may enter into parenthood with greater levels of commitment than do other parents. The lengthy adoptive process itself may facilitate parental investment in children (Rothman 2005).

Theories that highlight compensatory mechanisms do not deny that adoptive families face unique challenges or that social stigma negatively affects the experiences of adoptive families. In fact, there is ample research on adoption that recognizes the complexity of this relationship—pointing out the unique struggles and benefits of this family form (Cohen et al. 1993; Kirk 1984). Literature suggesting that adoptive parents struggle to be "perfect parents" provides a good example. Hartman and Laird (1990) depict this as a particular challenge rather than as a strength—one that is rooted in feelings of powerlessness, guilt, and illegitimacy as parents. Therefore, some of the same issues that cause adoptive parents to invest in the first place may temper their high levels of investment. They may increase their parental efforts so as to contradict considerable social and psycho-

logical barriers to operating as culturally supported two-biological-parent family forms might.

Notably, these findings do not square with two prominent theories of family investment—sociological family structure explanations and evolutionary science's kin selection theory. Family structure explanations highlight similar challenges to adoptive family functioning as do compensation theory explanations. The predicted outcome of these challenges, however, is much different: family structure explanations suggest that any deviation from the institutionalized, traditional, two-biological-parent structure may result in lower levels of investment by parents. What some might interpret as a scientific stamp-of-approval for traditional families ultimately may contribute to a social context in which other family forms are marginalized, have less support, and are unsure of how to operate as a "family."

Our research indicates that alternative family structures do not necessarily result in a disadvantage for children, and, in certain cases, alternative family structures may contribute to greater parental allocation of resources to children. This finding is part of a growing recognition of the strengths demonstrated by alternative family structures. Cheng and Powell (forthcoming), for example, show that the resources provided by parents in biracial families are generally greater than those provided by parents of corresponding races in monoracial families. The limited scholarship on gay and lesbian parents similarly suggests that their children may be less traditionally gender-typed, have greater ability to express their feelings, and possess more empathy for social diversity—qualities that many would deem as positive (Stacey and Biblarz 2001). In addition, adopted adults—like adults from two-biological-parent families—show advantages in terms of educational achievement, employment success, and asset accumulation over adults raised in all other alternative family configurations (Feigelman 1997).¹⁵ Further research should consider the ways that nontraditional family

structures positively—as well as negatively—affect the children in them.

These results also do not comport well with kin selection theory—a central tenet of evolutionary science. One of the impediments in encouraging dialogue between evolutionary science and sociology is the difficulty in locating empirically testable questions of interest to scholars in both fields. Adoptive parental investment is one such question that provides some leverage on kin selection theory. Although not disallowing for individuals' conscious decisions to invest or not invest in children, kin selection theory states that, in general, parents will direct their investments to biological progeny. Consequently, this theory suggests that adoptive parents as a group will invest at lower rates than will other parents. Our analyses indicate that, in fact, the reverse is true: adoptive parents invest in their children as much if not more than do biological parents.

Because these findings are restricted to a specific case (adoptive families) in a specific context (the contemporary United States), they should not be interpreted as categorically negating the long-standing kin selection theory or denying the potential role that biology may play in family life. Rather, our study suggests that the presence of nonbiological parents (or absence of biological parents) alone may not cause lower parental investment. These findings thus call for a reconsideration of evolutionary theories as the sole explanations for parental investment in other family structures, such as stepfamilies. The role of biology should be understood as powerfully mediated by social context. What counts as a "family" and the approval or stigma surrounding particular family forms may

impact of adoptive parents' investments on their children's test scores, we ran additional supplementary analyses. At the bivariate level, adoptive children's test scores are most like children from two-biological-parent families; however, with controls for parental investments, adoptive children have significantly lower reading, math, and general knowledge scores than children from all but a few alternative family configurations. When we account for sociodemographic characteristics, the coefficients increase, and adoptive children show significantly lower test scores than most children. These findings suggest that without these parental resources, adoptive children would perform worse in school.

¹⁵ Feigelman (1997) and Brodzinsky and colleagues (1998) suggest that adoptive family contexts gradually erode barriers to achievement experienced by adoptive children. To determine the short-term

have great import for how biology ultimately does or does not matter for parental investment.

Although our findings are not congruous with kin selection theory, some of the results can be seen as compatible with some evolutionary psychologists' claims that cognitive and physiological mechanisms developed in the EEA are no longer adaptive. These scientists posit that kin selection mechanisms among adoptive parents may misfire, causing them to invest in adoptive children as if they were biological children. This is consistent with our finding of high levels of investment on the part of adoptive parents. However, this account also logically implies that parents across *all* parental structures—including stephouseholds—should invest similarly in response to an innate love for children. In other words, if the predisposition to invest in children is indiscriminate, then parental investment in children should be indiscriminate. Yet, while evolutionary psychologists might use this reasoning to account for adoptive parents' investments, they also see lower investments by stepparent households as evidence for the general tenets of evolutionary theory. We question the extent to which the same social and historical context can be interpreted as both supportive of and unsuited for kin selection. It is difficult to argue that large scale economic and cultural changes in the United States, such as the move to postindustrialism and the development of the institution of marriage, have not affected *all* families (Cherlin 2005; Hartog 2000; Kaplan 1996). We contend that this evolutionary argument is most persuasive when evoked on the basis of specific temporal, historical, and geographical locations rather than on a case-by-case or post hoc basis. If used to delineate the scope conditions of kin selection rather than explain away contradictory findings, the EEA could have great analytical value.

Admittedly, this study is limited by issues of selectivity that affect virtually all family research. Family life does not easily lend itself to experimental design; most scholarship identifies the consequences of parental structure through analyzing the behaviors of individuals already in them. We cannot, therefore, assume that becoming an adoptive, step, or single parent will cause any given individual to behave in a certain way. Additionally, elements of selectivity are at work in every family structure. For example, stepfamilies are formed only after the

dissolution of at least one marriage or relationship, making it difficult to separate out the effects of divorce from those of being in a stepfamily. Recent research also indicates that stepfathers are significantly different from other men—having lower levels of education, less income, and lower rankings on the marriage market (Anderson 2000). In the absence of adequate controls for the vicissitudes of family life, we account for the same sociodemographic factors as others, even additional ones, in order to address the issue of selectivity. Ultimately, to the extent that one is willing to accept the viability of research on stepfamilies (and single-parent families) used to support family structure and kin selection theory, the same standards should be applied to work on adoptive families.

Our findings indicate that social scientists still have much to learn about how family structure advantages or disadvantages children. We find little support for well-established theoretical frameworks, but we do find promise in compensation theory to explain our findings. Although some research on biracial families hints at the presence of compensatory mechanisms for parental investment (Cheng and Powell forthcoming), we know little about how this theory applies across other alternative family forms.¹⁶ Lesbian and gay parents—facing high levels of discrimination, homophobia, and stigma—may also engage in compensatory parenting mechanisms that benefit their children (Stacey and Biblarz 2001). Ironically, the same social context that creates struggles for these alternative families may also set the stage for them to excel in some measures of parenting.

¹⁶ For example, we have little understanding of why compensation theory does not appear to explain investments among stepfamilies. Several possibilities exist: 1) given the increasing number of “blended” families and the ubiquity of stepfamilies in the mass media, they may encounter less stigma than adoptive families; 2) unlike adoptive parents, stepparents may not be expected to replace biological parents, but instead add on to an extended kin network—thus diluting responsibility for investing in children; and 3) stepfamilies are often formed when children are older and have established family networks, making attachment more difficult.

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