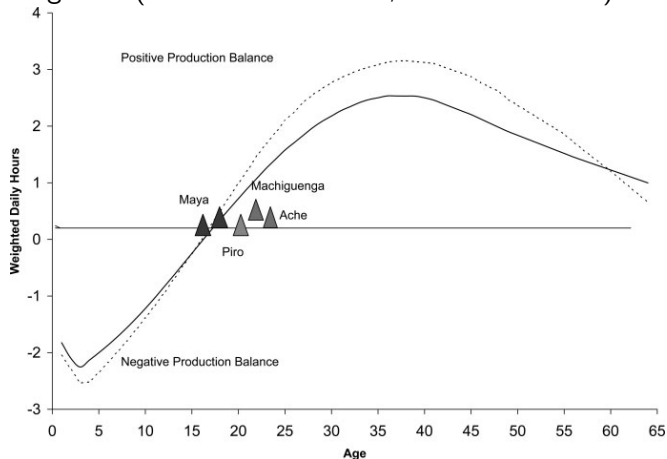


Who cares for the kids? Parents and Alloparents

- ▶ **The unique human life history: Why mothers need help**
- ▶ Grandparents: mother's mother is different
- ▶ Grandparents: Is teen pregnancy an adaptation?
- ▶ Fathers

Human life history: It takes a long time to grow up

Forager-farmer children work, but are economic dependents for a long time (dotted line=females, solid line=males)



(from Kramer 2005)

Human life history: Consequences

long juvenile period + short interbirth interval*
human mothers care for several children simultaneously

Two consequences:

- ▶ Conflicts of interest (sibling rivalry, parent-offspring conflict)
- ▶ A burden—moms can't do it alone! And they don't.

* chimps wean about 4-5 years, then have another baby. Human foragers wean about 2-3 years, reproduce while older child still very dependent

Mothers need helpers (“allomothers”):

Siblings, grandmothers (esp. mother’s mother), fathers, other kin

Efe (African tropical forest foragers):



- ▶ have on average 14 different caretakers
- ▶ from 18 weeks, spend more time with allomothers than own mothers

see the recent (3-2020) David Brooks column in *Atlantic* “The Nuclear Family Was a Mistake”

Mothers

Mothers are always the main child-rearers; What happens to children in traditional societies if mother dies?

- ▶ in early infancy: very few children survive
- ▶ in later infancy: about half survive
- ▶ after weaning: most survive

But two year old children are not self-sufficient, so their survival due to other kin taking over child care and provisioning.

(cross-cultural data, mostly traditional & historical natural fertility populations; Sear and Mace, *Evol Hum Beh* 2008)

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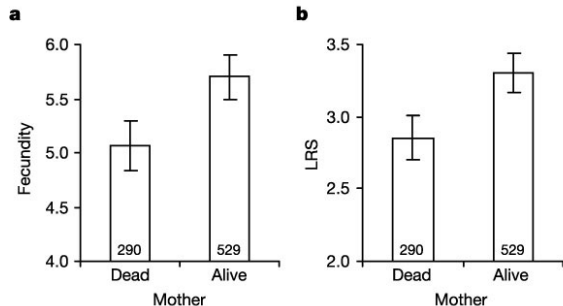
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Mother's mother: The grandmother hypothesis

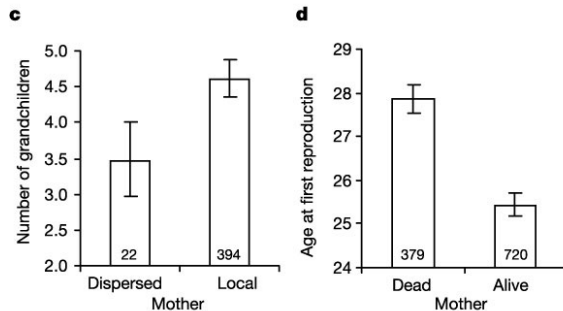
Humans live longer than other primates, but female reproduction stops early. 'grandmother hypothesis':

- ▶ grannies' work → higher fertility of daughters (Hawkes) or
- ▶ grannies' work → better survivorship for grandchildren.

Mother's mother enhances reproductive success



18-19th century
Finland (Lahdenpera
et al 2004)



Grandchild survival to
adulthood is
enhanced by 12%
when grandmothers
are under 60

“It takes a village”

But mother's mother may not be around:

- ▶ Ache women (36-45): only 1/3 had a living mother
- ▶ 2/3 of those lived away from her

Psychological implications:

- ▶ flexibility and “bonding” with multiple caretakers adaptive
- ▶ selection on infants to be adorable and socially savvy (Hrdy)

Which relatives are you close to?

Who are you close to? Who is more solicitous of your welfare?

Maternal or Paternal kin?

Female or male relatives?

Maternal vs. Paternal kin: effects on survivorship and fertility

Maternal kin increase child survival in most societies. Paternal kin?

- ▶ paternal grandmothers less likely to enhance (and may reduce) child survival
- ▶ paternal grandmothers more likely to *increase* fertility (e.g., the Gambia, historical Japan, historical Germany, Ethiopia)

Why?

Maternal vs. Paternal kin

Fertility is a risk and cost to mothers. Maternal and paternal kin may weight those differently (conflicts of interest)

- ▶ Husband's kin can replace her, mother's kin cannot.
- ▶ Children may be more closely related to the mother

Paternal grandmothers and husbands may pressure a woman to have more children than she wants

Maternal vs. Paternal kin: Grandparental certainty

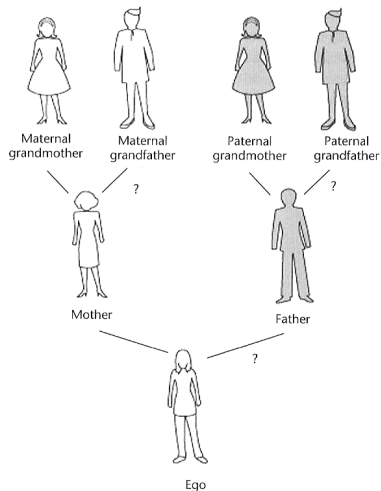


FIGURE 9.2 Differing degrees of grandparental certainty

Question marks show potential links of uncertainty.

Grandparental investment predictions

Parental certainty: Maternal kin have higher probable relatedness

Reproductive strategy: males allocate more to mating

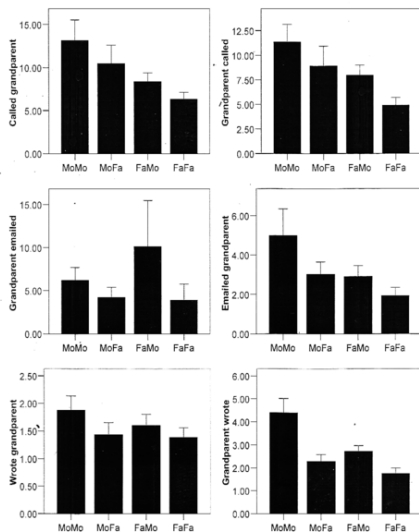
<i>Grandparent</i>	<i>Reproductive Strategy</i>	<i>Parental Certainty</i>	<i>Solicitude</i>		<i>Residential Distance</i>	
			<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Maternal grandmother	+	+/+	5.16	1.84	3.75	2.26
Maternal grandfather	+	-/+	4.52	1.98	3.74	2.28
Paternal grandmother	-	+/-	4.09	2.00	3.83	2.27
Paternal grandfather	-	-/-	3.70	2.02	3.85	2.32

Does MoFa invest because he lived with MoMo? Probably—widowed and separated MoFa invested less.

(from Euler and Weitzel 1996)

Which grandparent do you interact with the most?

Figure 1. Means (+ S.E.) for each grandparent by question (before transformation).



(from Bishop et al., *Evolutionary Psychology* 2009)

Why does mother's father invest?

Potential confound: mother's father lives with mother's mother; what if it were his independent decision?

Gaulin et al. looked at aunts and uncles, since e.g., mother's brother doesn't live with mother's sister.

Investment by aunts and uncles

"If you have both a maternal and paternal uncle/aunt, which one shows more concern about your welfare?"

72% chose mother's sister over father's sister

64% chose mother's brother over father's brother

Rate their concern over your welfare (1-7 scale):

mother's sister → father's sister → mother's brother → father's brother (from Gaulin et al. 1997)

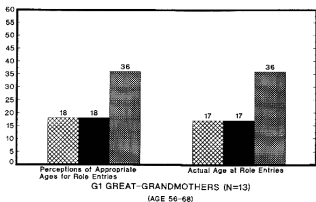
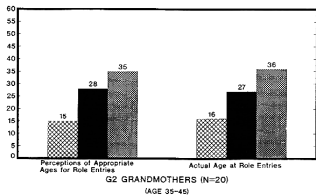
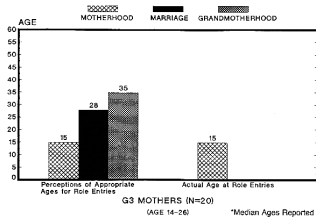
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Teen pregnancy

- ▶ Is it intentional or accidental (or “accidentally on purpose?”)
- ▶ Is it an adaptation and - if so - to what?
- ▶ Is it associated with bad outcomes?

Maternal grandmothers and teen pregnancy



- ▶ Is teen pregnancy an adaptation or a mistake?
- ▶ Data from a poor black community with little male support (3 cohorts)
- ▶ When should a woman become a mother, wife and grandmother?
- ▶ Motherhood at 15, Grandmotherhood at 35

(Linda Burton, "teenage childbearing as an alternative life-course strategy..." *Human Nature*, 1990)

Is teen pregnancy ever adaptive?

- ▶ Is it dangerous? (no, if control for SES)
- ▶ What circumstances favor it?
 - ▶ Deteriorating health and poor future prospects → no reason to wait
 - ▶ Where male investment is unlikely, early reproduction allows more grandmaternal help

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- ▶ **Fathers & other allomothers**

Other allomothers: fathers and siblings

- ▶ Siblings
- ▶ What do fathers do, and why? (mating or parenting effort)?
- ▶ Do fathers matter? Consequences of paternal investment



Aka father and child



Hadza girls

Do fathers matter? Only sometimes

In at least half the societies of a cross-cultural study, father's death did not affect child survival.

(And could be due to presence of a stepfather, not paternal investment)

- ▶ Ache: yes, but because of protection, not provisioning
- ▶ Hiwi: no, in spite of considerable investment
- ▶ Bari: secondary fathers increase survivorship

But dads could be important later, enhancing marriage and other prospects

Paternal care: Mating or parenting effort?

What looks like parenting effort could be mating effort, for:

- ▶ mate guarding
- ▶ mate retention

Do his fitness gains come from mating effort, or parenting effort (more competitive kids) or both? A contentious issue

Hadza Fathers

Hadza males:

- ▶ big game widely shared (→ mating effort?)
- ▶ small game, honey directed to family (→ parenting effort?)
- ▶ provisioning greater when wife has young baby (own, not step)

Summary

- ▶ Extended juvenile period + short IBI → alloparents the norm
- ▶ Mother mother enhances child survival significantly
- ▶ Father's mother often doesn't, may increase fertility
- ▶ Closeness greater with matrilineal kin (parental certainty)
- ▶ Closeness greater with female than male grandparents
- ▶ Teen pregnancy may be adaptive where male help unreliable
- ▶ Paternal investment and its effects is variable across societies