

In these cases a word does not have its customary denotation, but designates its subject. Words are used indirectly in such contexts. The indirect reference in such contexts is the customary sense of the expression. In the sentence Frege believes that the Morning

that... which by itself is an incomplete fact that... These phrases ultimately to make an assertion ("that two plus two is four"). These phrases ultimately depend upon the behavior of their noun-clause constituents, which also are identical with those of Frege's paraphrase of the assertion-stroke, i.e., "— is a fact" or "it is a fact that..." Frege interpreted these noun clauses as referring to an abstract, Platonic

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viability of descendants. We investigate grandmother effects in 617 patrilineal Bengali and 772 matrilineal Khasi households in N.E. India. Direct access to resources varies. Bengali women do no field labor nor do they market or own property. Khasi women own property and are productive workers in the fields and in wage labor and manage the household resources via selling and buying in the markets.

The current living status and the presence of a grandmother at the time of each birth was noted, and the current work effort of grandmothers was estimated through surveys on the frequency of a long list of child care, domestic, and field work activities by calculating kilocalorie unit estimates of effort based on amount of energy use involved in each. Survivorship to age 6 yrs of the children born to the reproductive women of the household, and weight and height of all children currently under age 6 years were measured and z-scores computed. The data show that in both groups the pace of fertility is faster for reproductive women of higher parities who have had a living mother-in-law (Bengali) or mother (Khasi). With respect to survivorship, only Khasi grandmother's status had a significantly positive effect (present, 0.966, absent 0.857;  $p < 0.001$ ) Also only Khasi grandmother's work effort had a positive effect on child's weight ( $r = 0.305$ ,  $p < 0.05$ ).

The more pronounced effects of Khasi grandmothers may be explained by their more direct access to material resources.

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Land use, migration, and reproductive health in Ngorongoro District, Tanzania. PW LESLIE<sup>1</sup>, R JOHNSON<sup>2</sup>, MTN MAGOMA<sup>3</sup>, T BENNETT<sup>1</sup>, and JT McCABE<sup>4</sup>. <sup>1</sup>University of North Carolina, Chapel Hill; <sup>2</sup>IPAS, Chapel Hill, NC; <sup>3</sup>Wasso and Endulen Hospitals, Ngorongoro District, Tanzania; <sup>4</sup>University of Colorado, Boulder.

A multidisciplinary team has launched a longitudinal study of the relationships between changing patterns of land use and economic diversification, on the one hand, and family demography and reproductive health, on the other, in Ngorongoro District, northern Tanzania. Rates of maternal morbidity and mortality in this region are among the highest in the country, and the recent spread of HIV threatens to exacerbate the situation. Adoption of agriculture to supplement the traditional pastoral economy is becoming widespread, but is severely restricted in a large part of the district by conservation policy. This contributes to variation among communities in the prevalence of temporary labor migration to urban areas, which in turn has demographic and health consequences for the sending

communities. Here, we report preliminary results on patterns of maternal morbidity and mortality, including pregnancy and delivery outcomes, results of STI screening, and how these are related to means of subsistence and patterns of labor migration by the Maasai and Sonjo women's sexual partners.

Over 1000 pregnant women, identified through urinary hCG tests and/or attendance at one of 55 mobile antenatal clinic sites, have been recruited, interviewed, and screened for syphilis and HIV. Pregnancies and outcomes will be tracked through 9 months postpartum. Leading causes of maternal mortality include hemorrhage during pregnancy or delivery, puerperal sepsis, and anemia. Differences between the spatial distributions of HIV infection and syphilis may reflect the relatively recent introduction of HIV and the greater opportunities for transmission of syphilis and other STIs in recent decades.

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Variation in hemoglobin levels and rates of anemia among the Tsimané of lowland Bolivia. KM LINDSAY, A MILLER, MO AIELLO, WR LEONARD, TW McDADE, Northwestern University, Evanston, IL, RA GODOY, Brandeis University, Waltham, MA, V REYES-GARCIA, V VADEZ, University of Florida, Gainesville, FL, T HUANCA, Instituto Cultural Aruwiyiri, La Paz.

Changes in health status are often seen among traditional populations undergoing the process of acculturation. Such changes are particularly evident among Amazonian populations of South America. This study examines patterns of variation in hemoglobin (Hb) levels and in the prevalence of anemia among the Tsimané Amerindians of lowland Bolivia, a population experiencing dramatic lifestyle change and integration into the market economy.

Data were collected from May through August of 2002 on children and adults from 12 Tsimané communities varying considerably in size and proximity to regional market centers. Hb levels were determined from finger-prick blood samples using a portable Hemocue Photometer.

In a sample size of ~1200 Tsimané individuals, levels of anemia are high, particularly among the more impoverished communities. Additionally, the Tsimané have lower Hb levels than those reported for the Aguaruna Jivaro of lowland Peru (Berlin & Markell, 1977, *Ecol Food & Nutr* 6:69-81). Anthropometric, demographic and socioeconomic correlates of Hb levels are examined to determine the avenues through which lifestyle change may be influencing hematological status.

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