Delayed Dispersal in Humans: Natal Territory Quality and Dispersal Timing
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In most species with parental care, offspring disperse from the natal territory either at sexual maturity or when they are competent to survive independently. In humans and numerous avian species, dispersal from the family of origin may not coincide with these developmental markers. Behavioral ecologists have taken an evolutionary approach to this anomaly, on the principle that similar behavioral characteristics across species allow investigation of parallel ecological influences on these behaviors. This study addresses this question by investigating the mechanisms of human family formation, using the framework of life history theory and behavioral ecological models of similar social units in other species.

For the purposes of this study a family is operationalized as a social grouping in which individuals interact with their parents after sexual maturity (Emlen, 1995). Family formation depends on delayed dispersal and is associated with fitness costs to delayers, who do not reproduce. There are several behavioral ecological explanations for delayed dispersal, each of which identifies possible fitness benefits that compensate for these costs; these include the Ecological Constraints model (Selander, 1964; Woolfenden & Fitzpatrick, 1984), the Benefits of Philopatry model (Stacey & Ligon, 1991), and the Life History and Skills Hypotheses (Arnold & Owens, 1998; Brown, 1987; Hatchwell & Komdeur, 2000). Using this theoretical foundation, Emlen (1995) analyzed the evolutionary dynamics of family groups and outlined a set of predictions about ecological circumstances that might influence family formation and stability. One implication of Emlen's model is that families that control high-quality resources will be more stable

than those with lower-quality resources, with stability defined as the degree to which families maintain co-residence. The above theoretical considerations suggest the following hypotheses: A) individuals from higher quality natal territories should be more discriminating in their dispersal choices, leading to delayed dispersal relative to individuals from lower-quality natal territories and B) local conditions should affect individual dispersal choices such that better opportunities outside the natal territory should lead to earlier dispersal relative to poorer dispersal opportunities.

Archival studies have investigated the influence of family circumstances on the probability of leaving a natal community (Clarke & Low, 1992; Low & Clarke, 1991), the probability of marrying (Clarke, 1993), and age at dispersal from the natal community (Towner, 2001), and previous work has applied Emlen's model to humans using proxy measures of "Natal Territory Quality" (NTQ) (Davis & Daly, 1997). Here, using two age-based cohorts (born in 1957 and 1967) from a longitudinal survey of U.S. families (the Panel Study of Income Dynamics), direct measures of NTQ are extracted to more rigorously test Emlen's prediction that higher NTQ leads to later dispersal. Specifically, this study investigates whether economic variables describing family of origin (NTQ) and local conditions influence age at three dispersal events (residential dispersal, marriage, and first reproduction).

Components of natal territory quality include family economic circumstances, household conditions, parents' education, parents' status (occupational prestige), and family composition, while local conditions were measured using county unemployment rate and size of nearest city. Multiple regression was used to detect significant relationships among the NTQ variables and each dependent variable. Each dependent

variable was considered separately with all relevant predictor variables. Where the NTQ variables were significant, results suggest that better conditions at home favor delayed dispersal. The relationship between local conditions and dispersal timing is complex, but an interaction between income and county unemployment suggests that NTQ and local conditions act together to influence residential dispersal timing. Finally, the decision to disperse might involve comparisons between conditions at home and conditions outside the home. Implications of these results for the original family-formation model will be discussed. In spite of its methodological limitations, an evolutionarily-informed understanding of social behavior has the potential to enhance traditional social science methods, providing insight into human family processes and facilitating answers to long-standing questions within the social sciences. Such an approach also contributes to our ability to interpret cross-cultural variation and patterns.

References

Arnold, K.E. & Owens, I.P.F. (1998) Cooperative breeding in birds: a comparative test of the life history hypothesis. *Proceedings of the Royal Society of London, Series B* 265, 739-745.

Brown, J.L. (1987) *Helping and Cooperative Breeding in Birds.* Princeton:Princeton University Press.

Clarke, A.L. (1993) Women, resources, and dispersal in nineteenth-century Sweden. *Human Nature* 4, 109-135.

Clarke, A.L. & Low, B.S. (1992) Ecological correlates of human dispersal in 19th century Sweden. *Animal Behaviour*, 44, 6770693.

Davis, J.N. & Daly, M. (1997) Evolutionary theory and the human family. *The Quarterly Review of Biology*, 72, 407-435.

Emlen, S.T. (1995) An evolutionary theory of the family. *Proc Natl Acad Sci, USA*, 92, 8092-8099.

Hatchwell, B.J. & Komdeur, J. (2000) Ecological constraints, life history traits, and the evolution of cooperative breeding. *Animal Behaviour* 59, 1079-1086.

Low , B.S. & Clarke, A.L. (1991) Family patterns in nineteenth-century Sweden: impact of occupational status and landownership. *Journal of Family History*, 16, 117-138.

Selander, R.K. (1964) Speciation in wrens of the genus *Camylorhyncus*. *University of California Publications in Zoology*, 74, 1-224.

Stacey, P.B. & Ligon, J.D. (1991) The benefits-of-philopatry hypothesis for the evolution of cooperative breeding: variation in territory quality and group size effects. *The American Naturalist*, 137, 831-846.

Towner, M.C. (2001) Linking dispersal and resources in humans: life history data from Oakham, Massachusetts (1750-1850). *Human Nature* 12, 321-349.

Woolfenden, G.E. & Fitzpatrick, J.W. (1984) *The Florida Scrub Jay: Demography of a Cooperative Breeding Bird*. Princeton:Princeton University Press.