

through the Demographic Transition reveals the nature of the change. From 1825 to 1900, the average age at which a woman gave birth to her last child dropped from over 40 to below 38. Prior to 1825, a woman continued to bear children until the menopause, so couples who had not lost children as a result of disease or accident had greater reproductive success. But as the century progressed, women who had not lost children were more likely to stop childbearing early, allowing less fortunate couples to catch up. Such an apparent abandonment of reproductive competition sits uneasily with the assumption that human reproductive attitudes and behaviour are evoked by psychological adaptations designed to promote reproductive decisions that maximise fitness in response to ecological conditions.

Studies of historical and contemporary fertility declines are consistent with the idea that reproduction is under social control. The adoption of family size limitation is associated with a widening of social networks that allows increasing interaction between people of different communities (Bongaarts & Watkins 1996; Kohler 2001; Watkins 1991). One result of such a change is a decrease in contact between kin and a rise in contact between nonkin. Because nonkin have no genetic interest in encouraging one another to behave in ways likely to lead to reproductive success, the reduction in influence from kin could result in a drift away from cultural norms that provide social rewards for family creation.

Two lines of empirical evidence support this suggestion (Newson 2003, Newson et al. 2005). Role-play studies have shown that when the purported recipient of reproductive advice is a daughter, women are more likely to advise behaviour likely to lead to reproductive success than when it is a friend. And people who have more contact with kin have more children at a younger age.

Without the influence of kin to keep behaviour directed toward competing for reproductive success, activity within the social network is likely to become increasingly inconsistent with the efficient conversion of resources into offspring. A superficial look at changes in the reproductive behaviour of European populations suggests that this is the case. The increased prosperity that follows modernisation allows virtually everyone to reproduce, and after the Second World War, Europeans (in Europe and former European colonies) took advantage of this. Most people married and had families, and even though family sizes were limited, many people became parents at a relatively young age, creating the birth-rate rise known as the “baby boom.” Then cultural values changed so that the status associated with motherhood declined. It became increasingly common for individuals to postpone marriage and childbearing or to forgo it completely. Same sex partnerships also became increasingly common and accepted even though creating a family is more difficult in such a relationship.

In a modern population, unrestricted mating is not likely to enhance fitness but it can reduce fitness, particularly in women, because of the associated risk of infertility due to sexually transmitted infections. Could unrestricted mating be part of a progressive abandonment of behaviours consistent with reproductive success? If so, SOI scores, particularly those of women, should be higher in cultures that were the first to experience a decline in contact with kin and the family size. The ISDP data reported in the target article support this hypothesis. European cultures were the first to modernize, and participants of European ancestry had significantly higher SOI scores than any other ethnic category.

The data can, therefore, be interpreted in a way that is very different from those offered by Schmitt – one that suggests that important aspects of reproductive behaviour are under social rather than individual control and that humans strive for reproductive success through cultural mechanisms.

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## Universal human traits: The holy grail of evolutionary psychology

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**Abstract:** Although the search for universal human traits is necessarily the principle focus of researchers in evolutionary psychology, the habitual reliance on undergraduate students introduces profound doubts concerning resulting data. Furthermore, the absence of relevant data from foraging societies undermines claims of cross-cultural universality in this paper and in many others.

Evolutionary psychology revolves around the quest for universal human traits. If a cognitive or behavioral trait can be shown to exist cross-culturally, researchers are often quick to claim it is universal and may therefore provide a glimpse into human nature. Prominent examples would include Buss (2000), with his research on sexual jealousy; Fisher (1992), with her work on long-term pair bonding; and Ridley (1996), with his theories of altruism. In the target article, Schmitt sets off along the same path, hoping to elucidate universal human sociosexual characteristics with data from 48 countries.

But Schmitt has chosen a difficult and dangerous path. For all its apparent breadth, this type of research often suffers from a lack of methodological depth. Schmitt and his colleagues succumb to the same temptation that plagues so much sexuality research: reliance on a subject population more convenient than representative. The vast majority of the respondents in this study were university students. (Note: Schmitt writes that they are “college-aged,” and in many of the countries surveyed, “college” refers to preuniversity or high school, but we assume he is referring to university students). We understand that undergraduate students are easy for many researchers to locate and motivate (e.g., by offering partial course-credit for returning a questionnaire), but this does not in any way make them valid representatives of human sexuality. Far from it. Even in liberal western cultures, college-aged people are normally in the very early stages of their sociosexual development with little, if any, experience to draw on when considering questions about one-night stands, long-term mate poaching or the ideal number of lifetime sexual partners, for example. In more restrictive cultures, this inexperience can only be more pronounced and thus impart even more bias to the research. In sexuality research, convenience and accuracy are often opposing forces.

As Schmitt points out, “because the . . . samples were primarily college students, any generalizations beyond college-aged populations would be inappropriate” (sect.7.1). He continues, “Importantly, the sociosexual lives of college-aged individuals may be quite different from older and more experienced men and women.” Quite so. Notwithstanding this caveat, Schmitt is clearly in search of universals, as he states here:

One of the objectives of the present study was to evaluate whether sex differences in sociosexuality are robust across the broad range of human cultures represented in [the ISDP]. Finding universal sex differences in sociosexuality would support parental investment theory (Trivers 1972), as well as other evolutionary perspectives on human mating (Alexander & Noonan 1979; Buss & Schmitt 1993; Gangestad & Simpson 2000; Hinde 1984; Symons 1979; Wilson 1987).

Whatever one may find in such a narrow sample pool, it is unlikely to be *universal*.

Beyond the limitations related to the subjects’ age, many of their responses are likely to have been deeply distorted by cultural pressures. In many Islamic countries, for example, a prostitute is popularly defined as “an unmarried woman with knowledge of sex.” What sort of self-reporting bias can be expected from presumably unmarried, female college-aged respondents being asked about their sexual experiences and fantasies in countries with such

deeply sex-negative and antifemale cultural indoctrination? It is highly doubtful that a study like this one is reaching beyond culture to any biological substrata where universal human traits may lie.

Another problem with using college students in this sort of multicultural study is that of class distinctions. In underdeveloped countries, only students in the highest class are likely to be fortunate enough to attend university. Indeed, a wealthy Ethiopian student may have much more in common with a British student than with a less well-off young adult from the Ethiopian countryside. Our field research in Africa suggests that sexual beliefs and behavior differ greatly among social classes and subcultures there and presumably in other parts of the world, as well (Jethá & Falcató 1991a; 1991b). Distorting effects of class and local subcultures are not addressed by Schmitt in the target article.

Another structural problem common to much research of this sort is related to theory underlying evolutionary psychology. One of the cornerstones of the discipline is the assumption that the vast majority of human psychological evolution took place in the so-called environment of evolutionary adaptedness (EEA) – normally defined as comprising that period bracketed by the first appearance of *Homo sapiens* and the origins of agriculture. According to this understanding, those of us living in nonforaging societies are somewhat ill-adapted to many aspects of our present environment and consequently suffer sometimes severe psychological and physiological consequences (Konner 1982). So it stands to reason that the search for *human universals* must include at least a few representative foragers, whose thought and behavior are not warped by the distorting effects of modern life. But there are no foragers among the 14,059 participants in this study. Existing research on the sociosexuality of foragers strongly confirms the existence of important similarities among unrelated foraging societies as well as dramatic differences from postagricultural sexual norms. (Beckerman & Valentine 2002) Swedes and upper-class Congolese may see themselves as very different from each other, but they may share important similarities from a forager's perspective.

Granted, it is no easy matter to distribute questionnaires in the Upper Amazon, but the difficulty or impossibility of including foragers in this type of research does not mitigate its vital importance. To his credit, Schmitt admits that “it would have been ideal to include additional samples from hunter-gatherer and tribal horticultural societies.” Indeed, Schmitt is very candid in discussing the shortcomings of the research, but despite these caveats, the results are repeatedly referred to as illuminating “cultural universals.” Although we sympathize with the difficulties faced by those seeking to uncover elusive human universals, future research will suffer greatly if we accept mistaken claims of success.

## Worldwide, economic development and gender equality correlate with liberal sexual attitudes and behavior: What does this tell us about evolutionary psychology?

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**Abstract:** Shortcomings in the target article preclude adequate tests of developmental/attachment and strategic pluralism theories. Methodological problems include comparing college student attitudes with societal level indicators that may not reflect life conditions of college students. We show, through two principal components analyses, that multiple tests of the theories reduce to only two findings that cannot be interpreted as solid support for evolutionary hypotheses.

We commend Schmitt for extending sociosexuality research to a broad multicultural sample and attempting to contrast several evolutionary theories of human mating. We share his interest in understanding human mating from an evolutionary perspective (Schachner & Shaver 2002; Scheib 2001) and welcome further tests of evolutionary hypotheses. Unfortunately, certain features of Schmitt's study limit the conclusions that can be drawn. Most importantly, the study did not provide an adequate test of Chisholm, Belsky, and colleagues' developmental/attachment theory (e.g., Belsky et al. 1991; Chisholm 1996) or Gangestad and Simpson's (2000) strategic pluralism theory, because of problems with the sampling procedures and the use of population-level measures of each country's reproductive environment and degree of gender equality. We explain these problems briefly below.

First, whereas the sampling procedure “allowed . . . a large number of cultures to be studied,” information about the cultures came from a special subset of the population – college students. As Schmitt notes, this “seriously limited the representativeness of national SOI profiles . . . [making] generalizations beyond college-aged populations . . . inappropriate” (sect. 7.1). Although Schmitt was able to compare average SOI scores from college students across countries, he could not perform legitimate tests based on variables at the societal level. For example, he tried to test developmental/attachment theory by examining the sociosexual attitudes and behavior of college students from countries with reproductively difficult versus less challenging environments. But it is in countries with reproductively difficult environments where one would expect college students to be least representative of the entire population. In cases where a large proportion of college students are members of the economic elite, they are a misleading sample on which to test ideas that apply mostly to the poorest, most stressed segment of society. Schmitt acknowledges this (sect. 6.7.1) yet still proceeds, following a logic that is akin to asking Stanford students about their sociosexual attitudes and then using their answers to test a theory likely to apply best to people living in the poor sections of Oakland. Not surprisingly, Schmitt finds no support for developmental/attachment theory using his method. Sampling from a wider range of countries (e.g., Jordan, India, Indonesia) with “more stress-related variability,” as suggested by Schmitt, does not solve the methodological problem.

Second, to identify countries with reproductively difficult environments and measure their levels of gender equality and economic development, Schmitt used population-level indicators such as infant mortality, low birth weight, and child malnutrition (measures of reproductive difficulty), the gender development index, percentage of women in parliament, divorce rate, and women's sex-role ideology (measures of gender equality), and gross domestic product and human development index (measures of economic development). These measures apply to the population as a whole and may not be representative of college students in a particular country. Thus, the meaning of Schmitt's correlations between sociosexual attitudes and behavior, on the one hand, and population-level measures on the other, depend on the similarity of the college students sampled to the general population on which societal indicators are based. If the college students in a particular society are more liberal than their fellow citizens, as is likely in the US, for example, the findings will be distorted in one direction, but if the students in a society are less liberal than their fellow citizens, as might occur where students attend religiously conservative schools, the correlation will be distorted in the other direction. Thus, the finding that students in more reproductively challenging countries tend to be more restricted in their sociosexuality may indicate a real association or a misleading artifact. We cannot tell without knowing more about how the college samples in various countries differ from other people in those countries.

Schmitt also used population-level measures to conduct multiple tests of developmental/attachment theory versus strategic pluralism theory. Table 5 outlines the predicted associations, based on each of the theories, between sociosexuality and nine of the