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Original Article

Why household inefficiency? An experimental approach to assess spousal resource distribution preferences in a subsistence population undergoing socioeconomic change☆,☆☆

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ABSTRACT

Two disparate views of the sexual division of labour have dominated the representation of intra-household resource allocations. These *joint* and *separate* interests views differ in their interpretation of the relative roles of men and women, and make different predictions about the extent to which marriage promotes economic efficiency (i.e. maximized household production). Using an experimental "distribution task" stipulating a trade-off between household efficiency and spousal equality in allocating surpluses of meat and money, we examine factors influencing spousal distribution preferences among Tsimane forager-horticulturalists of Bolivia (n = 53 couples). Our primary goal is to understand whether and how access to perfectly fungible and liquid resources – which increases with greater participation in market economies – shifts intra-household distribution preferences. We hypothesize that greater fungibility of money compared to meat results in greater squandering of money for individual fitness gain at a cost to the family. Money therefore requires costly strategies to insure against a partner's claims for consumption. Whereas nearly all Tsimane spouses prefer efficient meat distributions, we find a substantially reduced efficiency preference for money compared to meat controlling for potential confounders (adjusted OR = 0.087, 95% CI: 0.02–0.38). Reported marital conflict over paternal disinvestment is associated with a nearly 13-fold increase in odds of revealing a selfish money distribution preference. Selfish husbands are significantly more likely than other husbands to be paired with selfish wives. Lastly, Tsimane husbands and wives are more likely than Western Europeans to prefer an efficient money distribution, but Tsimane wives are more likely than Western European wives to exhibit a selfish preference. In sum, preferences for the distribution of household production surplus support joint and separate interests views of marriage; a hybrid approach best explains how ecological-, family-, and individual-level factors influence spousal preferences through their effects on perceptions of marginal gains within and outside the household.

1. Introduction

Intra-household resource distribution determines energy budgets available for growth, reproduction and survival, and is thus central to understanding trade-offs underlying human life history allocations. The sexual division of labor and resources – perhaps the most basic form of human economic specialization and exchange (Murdock, 1949) – is also a highly complex social relationship, entailing frequent cooperation and altruism but also defections and spite. Spouses face numerous barriers to generating economic surplus and allocating resources efficiently among family members, despite generally having more opportunities and willingness to share information than dyads in non-sexual relationships. Barriers include conflicting reproductive interests (Bird, 1999; Borgerhoff Mulder & Rauch, 2009; Gurven, Winking, Kaplan, von Rueden, & McAllister, 2009; Maynard Smith, 1977; Parker, Baker, & Smith, 1972; Smith, Bird, & Bird, 2003; Stieglitz, Blackwell, et al., 2012; Stieglitz, Kaplan, Gurven, Winking, & Vie, 2011; Trivers, 1972; Winking, Kaplan, Gurven, & Rucas, 2007), asymmetric information and unobservable action (Ashraf, 2009; Ashraf, Field, & Lee, 2014; Ligon, 2011). These barriers can result in reduced marital quality, verbal and/or physical disputes over appropriate levels of work effort and use of time and resources (Flinn, 1988; Hewlett & Hewlett, 2008; Stieglitz,

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Gurven, et al., 2012), and can contribute to the development and maintenance of patriarchal social norms that reinforce and exacerbate these barriers.

A goal of this paper is to examine factors influencing intra-household resource distribution preferences of spouses using an experimental approach in a small-scale forager-horticultural society, the Tsimane of Bolivia. Given that Tsimane and other subsistence-level societies worldwide are witnessing rapid changes in livelihood and increasing access to cash- based economies, another goal is to examine whether and how spousal resource distribution preferences vary across populations differing in their reliance on cash and the extent to which spousal labor is more substitutable versus complementary. Despite the complexity highlighted above that emphasizes both cooperation and conflict among spouses, two disparate views of the sexual division of labor have dominated the representation of intra-household resource allocations.

According to a ***joint interest*** view, the origins of the nuclear family are rooted in a sexual division of labor where men hunt wild animals and women gather plant foods (Lovejoy, 1981; Murdock & Provost, 1973). The pair bond between sexes is viewed as a cooperative endeavor aimed at joint production of altricial offspring, where women "trade" paternity certainty for long-term provisioning and protection by men (Isaac, 1978a; Lancaster & Lancaster, 1983; Washburn & Lancaster, 1968; Wood & Marlowe, 2013). Marriage enables men and women to achieve fitness benefits by producing economies of scale such that the production of the pair exceeds the summed production of adults working alone (Gurven & Hill, 2009; Gurven et al., 2009; Kaplan & Lancaster, 2003). Spouses thus meet consumption demands by drawing from "pooled energy budgets" (Kramer & Ellison, 2010; Reiches et al., 2009). This view is analogous to the "unitary" model of household decision-making in economics, where the household behaves as if it were a single unit with a single set of distribution preferences. Spouses either have identical preferences or only one spouse makes allocation decisions (Becker, 1991). Because partner-specific labor proceeds are pooled in the joint budget, efficient intra-household labor allocation should be that which maximizes joint production; resource distributions should be efficient regardless of whether a husband or wife produces the resource.

An alternative ***separate interests*** view posits that fitness gains from economic efficiency alone cannot account for marriage. According to this view men's work effort in foraging societies is not primarily motivated by a desire to provision offspring because men's game acquisition is unpredictable or unreliable, and once acquired, game is shared widely with non-household members and not reciprocated (Hawkes, 1991; Hawkes & Bliege Bird, 2002). This view proposes that men hunt because of the desirable social attention and mating benefits that come from providing meat, which is a widely shared public good. Because hunting is difficult and requires substantial skill, strength, endurance and knowledge, successful hunting is difficult to fake and serves as an honest signal of underlying male quality to potential allies, mates and competitors (Bird, Smith, & Bird, 2001). This signaling is effective because visibility of returning with a kill is high, and group members pay careful attention to men's hunting returns in order to obtain shares for themselves. Here men's work is viewed as a form of mating effort or status competition, rather than familial provisioning, so marriage is interpreted as a convention of publicly recognized property rights designed to reduce male mating competition, rather than a cooperative union designed to achieve economic efficiency. Women therefore choose good hunters because of their presumed genotypic or phenotypic quality, not because of their willingness to provide household resources. Intra-household distributions are thus expected to be inefficient (e.g. characterized by a spouse's selfishness) due to imperfect enforceability of marital contracts or informational asymmetries among spouses (cf. Bloch & Rao, 2002; Ligon, 2011; Lundberg & Pollak, 1993; Mazzocco, 2007).

Joint and separate interests views differ in their interpretation of the relative roles of men and women in the energetics of reproduction and in the life history adaptation. While it is often acknowledged that household decision-making contains elements of both joint and separate interests views, empirical studies usually conclude by supporting one view or the other. The topic has thus generated much controversy in anthropology, with much of the debate focusing on production decisions (e.g. why hunters target large vs. small game) and less emphasis on how spouses distribute production surplus. However, hybrid approaches containing elements of both joint and separate interests views have a long history in household economics (e.g. Bobonis, 2009; Chiappori, 1988; Manser & Brown, 1980; McElroy & Horney, 1981). A key tenet of a joint interest view is that a sexual division of labor and resources characteristic of marriage facilitates efficiency and maximization of household economic surplus. Yet an inefficient non-cooperative equilibrium within marriage can still be more advantageous (in terms of utility or fitness) for both spouses than divorce, as supported by experimental research indicating that spouses are willing to reject joint surplus maximization for greater personal control over resources (Ashraf, 2009; Mani, 2011; Munro, Kebede, Iversen, Jackson, & Verschoor, 2006), and the observation that spouses pool income for some but not all categories of consumption (Phipps & Burton, 1998). But even if divergent spousal interests are explicitly acknowledged (Almas, Armand, Attanasio, & Carneiro, 2016; Anderson & Baland, 2002; Basu, 2006; Duflo & Udry, 2004; Gurven et al., 2009; Heath and Tan under review; Lundberg & Pollak, 1993; Schaner, 2015), the question of whether spousal preferences yield efficient outcomes, and what factors contribute to household inefficiency remain unresolved. Answering these empirical questions is essential to advance theoretical models of household behavior (Del Boca & Flinn, 2014; Munro et al., 2006).

Field experiments are uniquely poised to offer insight into these questions by manipulating intra-household distribution choices to reveal spousal preferences. Experiments provide novel inferences about whether and why preferences deviate from efficiency in ways that prior observational studies cannot. Field experiments also permit more controlled comparisons of intra-household preferences across diverse societies.

1.1. The distribution task

Here we assess Tsimane spousal preferences regarding intra-household allocations using a "distribution task" (Beblo, Beninger, Cochard, Couprie, & Hopfensitz, 2015; Cochard, Couprie, & Hopfensitz, 2014) among spouses from the same marriage. In this task spouses must decide between two allocations of a resource between themselves and their partner. Each of five decisions provides the choice between option A (equally divided between partners) and option B (unequal division between partners but always efficient in terms of maximizing joint payoffs). Spouses thus face a trade-off between equality and efficiency (see Table 1). This equality-efficiency trade-off characterizes various allocation decisions regarding food, money and other household resources (e.g. Behrman, 1988; Engle & Nieves, 1993; Farmer & Tiefenthaler, 1995). The task is not designed to examine spousal production decisions per se (e.g. who acquires what), but rather how spouses distribute production surplus. The task permits identification of spouses who maximize joint payoffs (i.e. efficient), maximize their own payoff (extreme selfish), maximize their partner's payoff (extreme altruistic), or who are concerned with partner equality (inequality averse). No communication between partners is allowed during this one-shot exercise and one cannot deduce a partner's revealed preferences. While spousal interactions are obviously repeated and communication is possible outside of the experiment, many household decisions are made independently and provide incentives to free-ride on a partner. It must also be noted that participants have the possibility to choose the unequal but efficient payoff (option B) and then pool and distribute this payoff equally with a partner after the task. Inequality aversion thus does not necessarily prevent one from choosing option B, and the number of those choosing option A is only a lower bound estimate of the

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